COAL AGE

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What Is Going To Happen?

THE one question uppermost in the minds of all company officials today is—What does the Government intend to do to our business?

No one ever anticipated such a prolonged war. England started by spending $5,000,000 a day. Now she is laying out $40,000,000 every 24 hours. Yet this huge sum is being provided without paralyzing the country's industries.

At present the national revenue of Great Britain is 200 per cent. greater than it was before the war. Despite this taxpayer's burden, the country still flourishes. Banks, insurance companies and financial institutions are stronger than ever before.

At first many British companies were timid and postponed dividends, but now the different corporations distribute freely the profits at their disposal. Anxiety has given way to confidence.

One fact, however, has been developed. The slogan "Business as usual," was found in error. Such an ideal condition is impracticable. Some industries must suffer acutely; others flourish.

Three years of war finds Great Britain soundly prosperous. The government has laid all companies under a heavy toll, but even after meeting this onerous tax, the various corporations producing necessities are paying dividends that should satisfy the most exacting investor.

The industries of America MUST also prosper. The Government may inaugurate but cannot continue any plan that fails to encourage an increased production of fuel. Readjustment of the new Federal prices in individual cases is certain to follow the submission of facts to Washington, proving just where present rulings are unfair. Operators who lay down now wrong both themselves and their country.

There is not the least doubt but Dr. Garfield will act justly toward both producer and consumer. There isn't an industry in America will bear closer investigation than coal mining. We should be thankful that the local representatives of the fuel administration in each state and town will be selected from men who have no connection with the coal business. If honest citizens are chosen, there is nothing to fear, and the public will be obliged to accept without further outcry the judgment of its own agents.

The prices just fixed for coke, copper and steel are high enough to keep these great industries vigorously alive. Let us not lose faith in the fairness of Uncle Sam, and before many days have passed Dr. Garfield will surely order a revision of prices that will put the heart back in the coal business.

The public have for years attacked the coal industry. They have refused to listen to the truth concerning this great business. Now it is this same public that must investigate and establish for the coal owners and for the coal retailers a fair business profit, which is an outcome the industry has never been able to bring about for itself.

It takes but a few slackers and a few profiteers to damn a whole industry. These enemies within are more to be feared than the masses without. We can act now in such a way that when this great war is over the owners and producers of coal will have something they never had before—the respect and confidence of the American people.

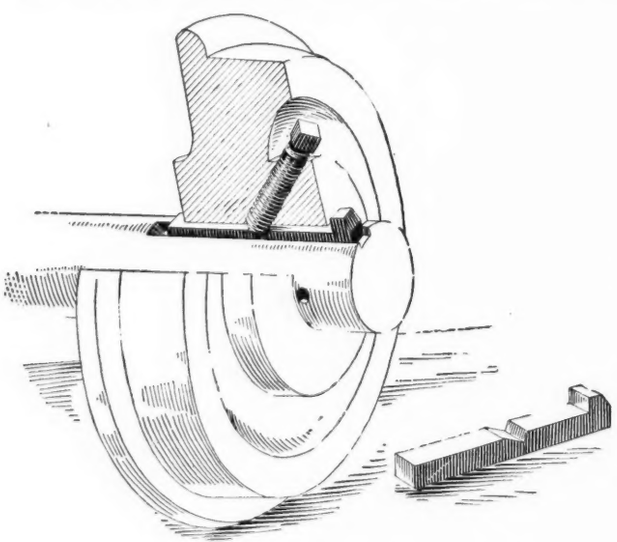
Ideas and Suggestions

Holding the Key in Place

By A. J. Cahen
Brooklyn, N. Y.

Having experienced difficulty in preventing keys from falling out of track wheels, notwithstanding that the keys were a driving fit, I devised the following means of overcoming the difficulty:

After placing the wheel and key in their proper positions, I drilled a ⅝-in. hole in the hub of the wheel at an angle of 20 deg. directly over the key, allowing the drill to enter the key just far enough to spot it. I then removed the key and filed a notch on it where it was spotted to correspond with the point of the later-



NOVEL MEANS OF HOLDING KEY IN PLACE

inserted setscrew (which had the ordinary cupped point). The notch was filed so that the setscrew would have a good bearing, at the same time keeping the burr which was raised by the screw point from preventing the removal of the key whenever that might be desired.

It is obvious that the wheel cannot come off, owing to the cotter pin, and the key cannot come out, for any tendency of the key to do so only holds the screw tighter since it causes a pressure on the sides of the threads.

Is an "Atmosphere" Doctor Needed?

"Business experts" have discovered that each business they are called upon to investigate has a distinct "atmosphere," or "spirit," and the success or failure of the business is closely associated with that atmosphere.

They tell us—they like to write books, these business experts—that the amount of work and the kind of work a man is capable of doing is dependent largely upon mental and physical forces which control his every action and yet about which he is entirely ignorant. But Mr. Trained Observer can detect and analyze these forces in a group of men and from such an analysis decide accurately as to the "atmosphere" that is surrounding them.

If one of these experts finds a business institution steeped in an atmosphere of suspicion and gloom, he hurries to the manager and asks for a chance to show what can be accomplished by doctoring the atmosphere.

But what has all this to do with coal mining?

Are the coal-mine operators in a joyous mood today toward that part of the Government which exercises jurisdiction over them? Are the officials of the miners' union solicitous today about "good feelings" toward the operators? Are the coal miners—union and nonunion—enthusiastic today about their work?

Is it possible that the entire industry—our coal industry—needs the services of an atmosphere doctor?

Does It Pay To Recompense Loyalty?

Many operators consider coal mining as a cold-blooded proposition, and they work along on the theory that sentiment and money-making will not mix. What a woeful state of affairs it would be were all mining men of the same opinion. Coal mining, or any other money-making enterprise for that matter, in which loyalty and long service are not appreciated, is inevitably bound to suffer, as it is human nature for one to give as he receives.

With the youth, in any corporation, that takes the place of dispossessed age, loyalty and experience, there comes an exhilaration of spirits that is not always so judiciously used for the benefit of the employer as the less boisterous energy that was displaced. Quantity replaces quality in this instance, yet we need both; and we can get them only by recompensing loyalty and long service, even as we are eager to serve industry by giving youth a chance.

Experience and practical wisdom in any business are products not so much of schools as of long service and attention to detail, and it must not be forgotten that youth gains but slowly the intimate knowledge of a business that leaves with the departure of an old employee. Quantitative analysis of energy is not always the best. There comes a time when the grind begins to pall.

The exhilaration of youth varies inversely with experience, and eyes that at first are blind to all but the narrowest personal interests seek wider fields of vision. They look at the present, and then inwardly, retrospectively. They recall the ruthless eviction of another who in his day was young also, and they begin to collate facts not altogether suggestive of loyalty or service. A corporation that sows the wind of selfishness reaps a whirlwind of individual indifference to corporate welfare.

The financially wise mining men recognize the fact that a certain percentage of sentiment toward loyalty and long service which allows for the inevitable depreciation of physical energy is but common justice. The most prosperous corporations do not need to be told that it *does pay* to recompense loyalty.

Better Housing To Hold Labor

The intense speeding up of American industries during the last three years has resulted in insufficient housing facilities in many industrial communities. This has led to a condition of unrest on the part of the employees, who migrate from one part of the country to another, thus seriously affecting the stability of business and interfering with steady production.

These conditions have been overcome to a considerable extent by many mine owners and manufacturers, who are putting up blocks of ready-to-build workmen's cottages and boarding houses. The parts of these houses are all standardized, and the companies that manufacture them supply working directions which make the putting up of the houses quick and simple. This system of building construction is quite in line with modern methods and should receive the serious attention of mine managers and others who are desirous of providing additional housing facilities for their employees.

Combination Overburden Coal Chart

BY THOMAS F. KENNEDY*
Washington, D. C.

In order to facilitate the computation of quantities of overburden and coal in a stripping proposition, I have made use of the accompanying combination overburden coal chart, which comprises two simple curves. By studying the chart it can be seen that the curves are drawn for one acre of overburden with variable thicknesses ranging from 0 to 50 ft., and for one acre of coal with thicknesses varying from 0 to 25 feet.

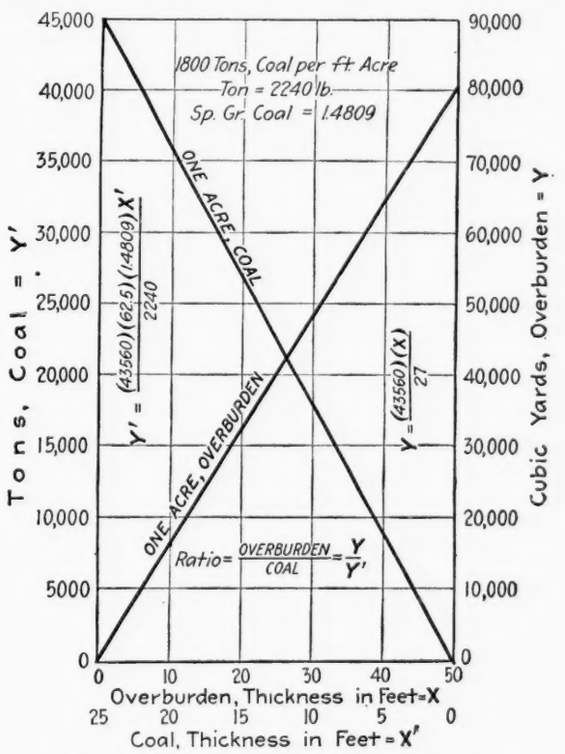
By calculation of the straight line equation $Y = \frac{(43{,}560)X}{27}$, in which X equals the variable thickness of overburden in feet plotted as abscissae, X-axis, with origin on the left, and Y equals the variable quantities of overburden in cubic yards plotted on the right vertical scale as ordinates, Y-axis, the one-acre overburden curve is drawn. In the equation $Y' = \frac{(43{,}560)(62.5)(1.4809)X'}{2240}$, X' equals variable coal thicknesses in feet, which are plotted as abscissae with origin on the right, Y' equals the number of long tons of coal (specific gravity = 1.4809), the varying tonnages being plotted as ordinates on the left vertical scale. The various coördinates locate the one-acre coal curve.

It is safe to say that, except under extraordinary conditions, the average anthracite stripping proposition will not have an overburden greater than 50 ft. in thickness or a coal bed greater than 25 ft. thick, so that the chart will cover the majority of cases.

Before showing the practical application of the curves, it might be mentioned that the average coal thickness of a prospective stripping is found by taking sections at the faces of the chambers adjoining the stripping area or by the churn or diamond drill method on the surface of the area in question. The average thickness of overburden can be obtained by either the churn or diamond drill method.

The average thicknesses of both coal and overburden secured depend upon the method of prospecting, certain uncertainties existing in all methods. In my opinion, therefore, good results can be obtained by using the nearest foot and the nearest half-foot in the calculation of coal and overburden respectively.

Suppose, for instance, it is desired to know the quantities of overburden and coal in a stripping area of any number of acres with overburden and coal thicknesses averaging 25 ft. and 5 ft. respectively. Referring to the chart, the number of cubic yards of



COMBINATION OVERBURDEN COAL CHART

overburden is found by finding the intersection of the perpendicular from the 25 ft. abscissa, X-axis, and the one-acre overburden curve. The quantity is read on the right vertical scale and is found to be 40,333 cu.yd. The total quantity for any number of acres can be found by applying the factor representing the number of acres. The same operation is followed out in determining the number of tons of coal. For a coal thickness of 5 ft. the number of tons, 9000, is read on the left vertical scale. The area factor is then applied to obtain the total quantity. The ratio of overburden to coal is found by dividing the total number of cubic yards of overburden by the total number of tons of coal.

In the interpolation of the results a small percentage of error will exist, but this error can be reduced to a minimum by making the scales larger. On the other hand, however, because of the uncertain data as to the thicknesses of coal and overburden, the percentage of error is negligible and curves as plotted are suitable for all practical purposes.

*Formerly Assistant Stripping Engineer, Delaware & Hudson Coal Co., Scranton, Penn.

Strip-Pit Mining of Bituminous Coal*—I

By H. H. STOEK
Professor of Mining Engineering, University of Illinois, Urbana, Ill.

A comprehensive account is given of the development of steam-shovel work to date in every state in which such work is being done. The "dead coal" obtained in some strippings is sold at a higher price than coal from underground mining, but in most cases stripped coal sold in 1915 at a price from 7 to 20c. lower than coal from deeper workings, though it may be suggested that the ability to produce the coal more cheaply than from subterranean workings had something to do with the establishment of this differential.

FUNDAMENTALLY, the reasons which cause us to make choice of any one method of mining a coal seam are safety of operation, cheapness of producing the product and the character of the product as a salable article. From the standpoint of safety, open or strip coal mining is always preferable, as many of the dangers inherent in underground work are absent, such as explosions of gas and dust, falls of roof and coal, and also to a great extent the dangers due to haulage and the use of explosives. Thus are eliminated four of the chief causes of accident from which about 75 per cent. of the underground accidents in coal mines occur. The conditions under which coal is stripped also make the work much safer than ordinary quarry work, as the depth of the pit is usually comparatively slight.

From the standpoint of low mining cost, there is much misapprehension and many of the costs given are misleading in that they do not take into account such items as the destruction of the surface for future use, the full cost of the removal of the overburden, depreciation, amortization, coal depletion, loss of time through floods and from bad weather in winter, etc. Coal is no doubt often put on the cars at less cost by stripping than by underground mining, but not by any means is it always so as is too generally assumed. In some cases coal must be obtained by stripping or not at all, due to the fact that the small amount of overburden renders underground mining impossible.

The cost of opening up a strip mine is unusually heavy. According to J. A. Swanberg, of the Carbon Hill Mining Co., the amortization of this charge sometimes amounts to as much as 15c. per ton as against 3 to 5c. in many underground operations. The condition of the marketable product in competition with coal mined by the ordinary methods is a subject that has not received great consideration and is one upon which there will probably be a wide difference of opinion.

C. E. Lesher, in the U. S. Geological Survey, *Mineral Resources* for 1915, says:

> Stripped coal does not, however (except locally), bring so high a price in the market as other coal from the same bed, mining from under deeper cover. The average value per ton for the pit coal from Illinois was 10c. and for Indiana 20c. per ton less than the average for the state. The difference in Kansas was 8c.; Missouri, 7c.; and Ohio, 17c. The Oklahoma pit coal averaged 7c. higher than the output of the state.

Dr. F. C. Honnold, secretary of the Illinois Coal Operators' Association and an operator of both stripping and underground operations, suggests that a deduction of 15c. per ton must be made for the inferior quality of stripped coal because it is obtained near the outcrop. In the Kansas field, Eugene McAuliffe says:

> Coal found under cover of less than 15 ft. in thickness is usually soft and low in volatile and sulphur content, high in fixed carbon and moisture, and is not adapted for steam-making purposes, but is consumed by the zinc smelters for fluxing purposes, being sold under the trade name "dead coal," on account of the inert qualities it shows when attempts are made to burn it.

Large quantities of Illinois stripped coal have been used at the boiler plant of the University of Illinois. Those connected with the plant are of the opinion that

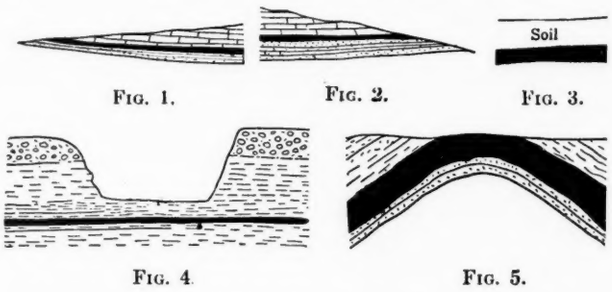


FIG. 1. FIG. 2. FIG. 3.

FIG. 4. FIG. 5.

FIGS. 1 TO 5. GEOLOGICAL CONDITIONS FAVORING COAL STRIPPING

a larger quantity of this coal is required to produce a given amount of heat than is required when coal from the same region is produced by underground mining.

The evidence on this point for other districts is scanty and a discussion of this phase of the subject will be welcomed. If the stripped coal has been subjected to weathering, one would naturally expect it to be of slightly lower grade than coal in the same bed found under such heavy cover, that weathering could not take place; but unless weathered, there is no reason why stripped coal should differ from coal mined by any other method. In other words, the deterioration is due to the method of occurrence and has no relation to the method of mining.

The conditions under which bituminous coal has been stripped to date are very different from those obtaining in the stripping of anthracite; for in the anthracite region the beds have been thick and often steeply inclined, while in the bituminous strippings the beds have been usually flat, are in many cases quite thin, and seldom over 6 ft. thick. The dumping area near anthracite deposits is usually ample and the destruction of the surface for farming purposes does not need to be considered, while some of the bituminous strippings are in very fertile farming country.

The geological conditions that render stripping possible may be briefly given as a bed of sufficient thickness,

*First part of article entitled "Steam-Shovel Mining of Bituminous Coal," a paper to be read at the St. Louis meeting of the American Institute of Mining Engineers, October, 1917. Much assistance was rendered by Eugene McAuliffe, whose account of the Kansas stripping fields prepared for the same meeting is incorporated in Mr. Stoek's paper.

at not too great a depth, and covered by soft or comparatively soft material. The thickness of coal that is minable is determined by the cost of mining, the quality of the coal and the price obtainable, which will vary with market conditions. At the present time beds varying from 20 in. to 7 or 8 ft. are being stripped. The thickness of overburden removable depends upon the machinery available and at present the maximum seems to be between 40 and 50 ft., but no one can say that steam shovels have reached their maximum development. Comparatively hard shales are easily handled by modern steam shovels, but when solid rock such as limestone occurs in the overburden and requires blasting, it seems to offer a difficulty that in a number of instances has rendered stripping unprofitable. The geological occurrences of beds that render mining by surface stripping possible are:

1. A slightly inclined outcropping bed under a comparatively flat surface, Fig. 1. This is the condition in the southeastern Kansas field, where, as noted elsewhere in this paper by Mr. McAuliffe, there are two seams, one varying from 33 to 42 in. in thickness and the other 22 to 25 in. in thickness with 65 ft. of material between the seams. The dip is small and the cover varies from 8 to 40 ft. and is composed of soft slate, shale, clay and a soft fissured sandstone.

Fig. 2 shows a similar condition where the coal bed may be flat or slightly inclined and where the amount of stripping possible is determined by the steepness of the slope of the hill.

According to J. H. Sinclair, in the *Colliery Engineer* for June, 1913, there is a bed of coal 10 ft. thick at Tofield, Canada, occurring under a rich prairie loam on a dry sub-soil, which is sometimes from 10 to 15 ft. deep (Fig. 3). The coal area is estimated at 20,000 acres which will give 170,000,000 tons available for stripping.

Fig. 4 shows a condition found in eastern Illinois (Danville district), where a horizontal coal bed was originally overlaid by a considerable thickness of shale and other rock, but small areas have been eroded by streams so as to leave between the surrounding bluffs an area well suited to stripping.

THERE are no published records of the mining by steam shovel of thick, steeply dipping bituminous beds, nor of the extraction by the same method of the bituminous coal in anticlinal outcrops. These conditions are common in anthracite strippings. The opportunity for mining afforded by an anticlinal stripping is illustrated by the cross section in Fig. 5.

In southern Illinois occurs the nearest approach to the anticlinal outcrop. Here is said to be a considerable stripping area where the No. 6 coal comes near the surface as a result of the so-called Duquoin anticline, which is more properly a monocline as only one side is inclined to any extent. A small stripping operation has been carried on in this locality for some years and extensive ones are projected for the near future. The coal is from 6 to 7 ft. thick and occurs under cover varying from 11 to 41 feet.

To determine the area now being stripped, the areas that are available for such stripping, and the geological conditions that render stripping possible, letters were sent to a number of state geologists, heads of mining departments and individual operators and the following is a digest of the replies that were received.

FOR the state of Alabama the following statement was made by E. A. Smith, state geologist:

Many years ago coal stripping was done on a large scale in Tuscaloosa County, where the conditions were favorable. The Brookwood group of coals where they were found high upon the hills had slight cover that could be readily removed. The Warrior Basin coals also were so distributed as to be suited for stripping as may be seen in the Alabama reports on those measures.

C. H. Nesbitt, chief mine inspector of Alabama, says:

There are two stripping operations in Walker County, one located at Carbon Hill on the Jasper seam being stripped by the Brookside Pratt Mining Co., and another in Walker County, 10 miles north of Jasper, on the Jefferson seam, and operated by the Sunlight Mining Co. The geological conditions which render stripping possible are a flat seam with approximately 30 ft. of cover and not much sandrock, the roof at Carbon Hill being principally slate. At Jasper the overburden contains sandstone. I can hardly estimate the area being stripped and the coal tonnage available.

The 1915 Alabama mine inspector's annual report gives the output of the Sunlight mine as 1803 tons and adds that 400 tons were used at the mines. The mine worked only 40 days during 1915.

J. B. Baddil, of the Sunlight Mining Co., writes on Apr. 17, 1917, that the Sunlight Mining Co. is using a 250-B Bucyrus revolving shovel with a 6-yd. dipper. The company has stripped about 30 acres and has from 7000 to 10,000 acres of coal land available. The thickness of the seam averages 26 in. and the overburden about 25 feet.

From Colorado the following note was obtained from R. D. George, the state geologist:

There is no stripping of bituminous coal in this state at the present time. A few years ago some was done in Routt County and a little in Gunnison. I think, however, that the stripping work was discontinued several years ago. In the instances referred to the coal was overlain by a very much disintegrated shale and in places by stream detritus. None of this stripping was done with a view to production of coal on a large commercial scale, but for local use.

There are four stripping areas in Illinois. The Danville district has one and Southern Illinois has three.

Danville District—This is located west of Danville, Vermilion County, and near the Indiana border. It is the area in which the modern steam shovel has been so conspicuously developed, as will be noted elsewhere.

The No. 7 coal seam, although usually too deep to be stripped, has in this district in a number of instances an overburden of only from 15 to 45 ft., due to the fact that the streams over it have eroded valleys. It is in these valleys that the strippings are mainly located. As the coal goes under the hills surrounding these valleys the mining operation usually combines a stripping pit with an underground mine, the latter being worked by the room-and-pillar method. The coal is from 5½ to 6 ft. thick and yields about 10,000 tons per acre. In this district are a number of brick plants and at many of them the shale overlying the coal is also mined with the steam shovel and utilized in the manufacture of brick, the underlying coal furnishing fuel for the plant.

The brick companies are not generally shippers of coal and mine only for their own use, and Messrs. Hartshorn, under the several names of the Carbon Hill Coal Co., the Missionfield Coal Co. and the Two Rivers Coal Co. mine most of the coal which is stripped in that

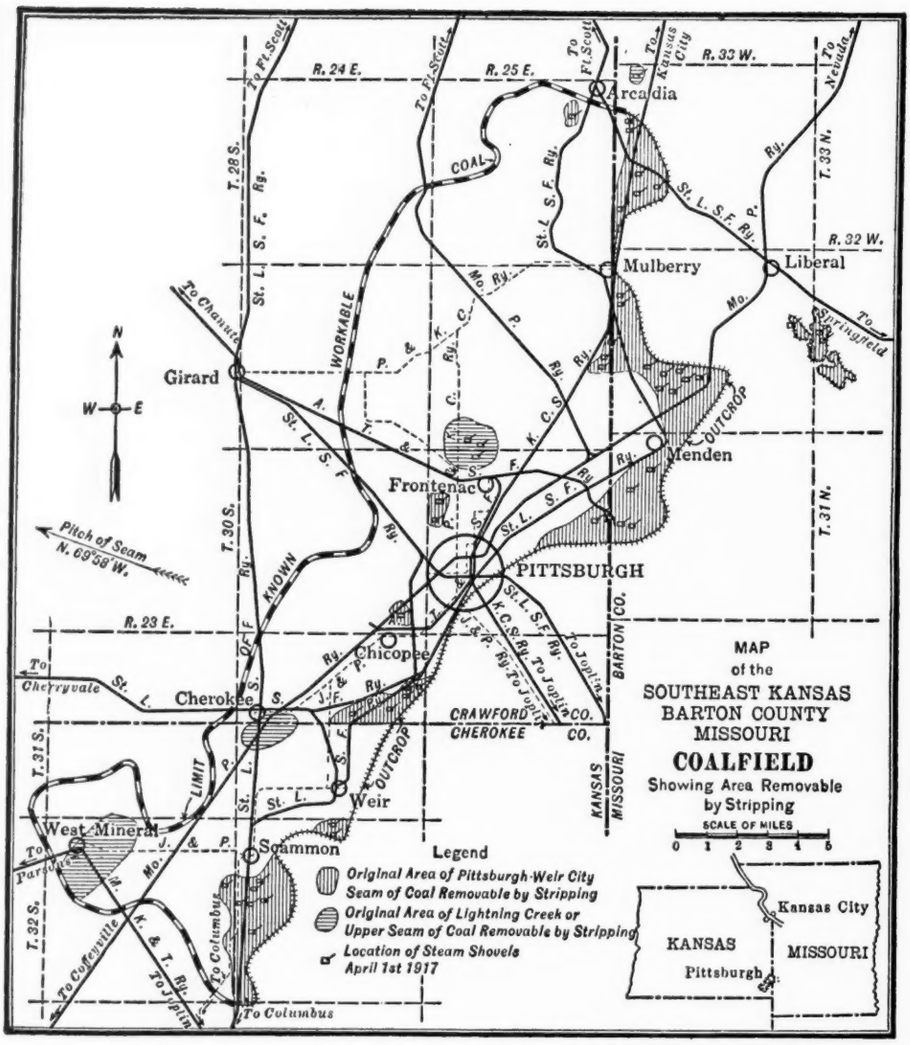


FIG. 6. MAP SHOWING AREAS IN SOUTHEAST KANSAS WHERE COAL CAN BE STRIPPED PROFITABLY

district for sale in the market. These companies own three shovels; two are at present operating, and the third will soon be put into operation. These are large Marion shovels, two being type No. 270, one having a 5-yd. dipper and 90-ft. boom, one an 8-yd. dipper and an 80-ft. boom, and one (type No. 250) a 65-ft. boom and 3½-yd. dipper. One of these is at present operating in the Two Rivers mine, another at the Carbon Hill mine and a third at the new Mission mine.

The stripping plant of the Western Brick Co. in the Danville district is of particular interest on account of the variety of operations carried on. The glacial till on the surface varying from 5 to 10 or more feet in thickness, is first hydraulicked. Then the shale from 20 to 30 ft. thick is mined with a standard Bucyrus No. 75 steam shovel and used for the manufacture of brick. Finally the underlying coal, 5 to 6 ft. thick, is mined and loaded by hand and used at the brick plant for fuel purposes. The coal is shot loose by charging 1½ lb. of powder in 2½-in. vertical holes, a row of which is drilled 6 to 8 ft. back from the face and about 12 ft. apart. The cost of stripping under these conditions runs up to 40 or 50c. per ton of coal on the cars.[1] The Western Brick Co. also has a Marion model No. 250 shovel operating at its No. 3 plant south of Danville. *Southern Illinois Districts*—Near Marion in Williamson County the new Enterprise Coal Co. has approximately 60 acres of coal, a part of bed No. 6. This is suited for stripping and has only 18½ ft. of overburden. A Marion No. 250 shovel with 3½-yd. dipper and 75-ft. boom is used for the stripping and a model No. 36 shovel with 1½-yd. dipper is used for loading. The stripping area is an isolated patch of coal and although it is near the outcrop the conditions are not typical of outcrop workings. Near Duquoin, Perry County, there was for several years a small stripping property worked by a very primitive shovel, which is now not operated. There is, however, considerable stripping activity in connection with lands north and east of Duquoin, and in a short time two of the largest type modern shovels will be operating. G. W. Dowell and William LaFont, of Duquoin, estimate that there are some 600 acres in the neighborhood of Duquoin underlaid by 7 ft. of the No. 6 coal, at a depth of from 11 to 41 ft. The outcrop of No. 6 coal westward from Duquoin has been quite thoroughly prospected, according to Dowell and LaFont, but no available stripping area has thus far been discovered. Near Millstadt, east of St. Louis, the Northern Coal Co. had a Marion shovel, type No. 250 with 75-ft. boom and 3½-yd. dipper. It is now abandoned.

With reference to Indiana, it may be reported that M. Scollard, the mine inspector, says that there were in Indiana, September, 1916, ten stripping plants, with capacities of 2000 to 20,000 tons per month. These plants are described by Mr. Scollard and the operating companies as follows:

Globe Mining Co., near Staunton, mining the No. 3 coal, 5 to 7 ft. thick with 14 to 40 ft. of overburden. The coal is loaded with a small shovel; the plant has a capacity of 1000 tons per day.

The Warren Coal Co., near Hymera, is mining the No. 7 seam, 5 ft. thick with an overburden of soil and soft shale. The floor is soft and the output is 600 tons per day. One 5-yd. Marion shovel is used for removing the overburden and one 2-yd. loading shovel for the removal of the coal.

The Forschner Coal Co., near Linton, is mining the No. 4 seam, which is 5 ft. thick and has 20 to 30 ft. of

[1] S. O. Andros: Coal Mining Practice in District VIII (Danville). Illinois Coal Mining Investigation, "Bulletin" 2 (1914), 47.

overburden consisting of 18 ft. of clay and 12 ft. of soft shale. It has a fireclay floor. The capacity of the plant is 800 tons per day; 60 acres have been stripped and 50 acres are available. A No. 250 Marion shovel is used, with 3½-yd. dipper; a model No. 31 is used for loading coal.

The Carbon Mining Co. at Carbon is mining the upper Brazil block coal, 4 ft. thick with 14 to 25 ft. of overburden. In opening the pit, a No. 14 Bucyrus dragline was installed and this is now used for hoisting the coal in boxes from the pit; it is also used for mining 7 to 12 ft. of underlying fireclay. The output of coal is 4000 tons per month. Ten acres have been stripped to date and 20 remain to be stripped. The pit is drained through boreholes into mine workings 60 to 70 ft. below the strip pit.

J. L. Conover & Co., Carbon, are working block coal 4 to 4½ ft. thick with 9 ft. of surface clay and 9 ft. of shale overburden. There is 8 to 11 ft. of good fireclay under the coal. The relation between the coal stripping and the fireclay industry is well described by Mr. Conover as follows:

> At present we are not doing any stripping but are loading the clay from under the coal which we have stripped. We originally started stripping with a 70-C Bucyrus steam shovel, which is a railroad contractor's implement, and loaded the overburden in Western 4-yd. dump cars and hauled the dirt to a spoil dump with 18-ton Davenport dinkies. However, we found this method too expensive. We have contracted the stripping of our coal. The contractor is to strip the coal with a dragline, load the coal on 4-yd. cars in the pit and deliver these cars to the bottom of an incline where they are pulled up to a tipple with a cable and where they dump automatically. We have stripped about 1 acre and have about 10 acres to strip. There are about 20 ft. of overburden, half blue shale and half yellow clay. We grind 7 ft. of fireclay that is found under the coal and ship it to foundries to use in molding and laying brick. Our fireclay business is by far the best part of our stripping operation.

The Sunlight Coal Co., of Booneville, Ind., is mining the No. 5 seam, 7 ft. thick and with 20 to 25 ft. of overburden. The Linton Coal Co. near Linton has one 5-yd. Marion shovel and one small loading shovel. Other companies in Indiana are the Inland Coal Co. at Janesville, the Richards Coal Co. at Terre Haute and the Eppert Coal Co. at Coal Bluff.

The Linton Fourth Vein Coal Co. at Linton is stripping 12 to 14 ft. of shale and clay soil with a No. 225-B Bucyrus shovel having an 85-ft. boom, a 62-ft. dipper handle and a 7-yd. dipper. This shovel can move 8000 to 10,000 yd. of overburden in two 8-hour shifts. The coal is loaded into cars with a 35-B Bucyrus shovel which loads from 1100 to 1300 tons per day. James N. Lees, assistant state geologist for Iowa, reports that he does not know of any stripping being done in that state. The following account of the southeast Kansas-Missouri area and operations has been furnished by Eugene McAuliffe:

> What is known as the southeastern Kansas coal field is located in Crawford and Cherokee Counties, Kansas, and Barton County, Missouri. Fig. 6 shows the eastern crop line and the western edge of the coal, where the cover is about 260 ft. deep and where erosion has replaced the coal with sandstone. An arrow indicates the direction of the dip, which runs N 69° 58′ W, as calculated by me from levels covering a large number of drill holes.
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> Two seams of coal in this field are being stripped (Fig. 7); the lower or Weir City-Pittsburg seam, varies from 42 in. in thickness in the south end of the field to 33 in. in the north end. (According to H. A. Buehler, state geologist of Missouri, these coals occur in the Cherokee formation of the lower coal measures.)
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> My estimate of the strip coal in this territory and confined to this seam, as originally found in place and now remaining, is substantially as follows:

	Acres
Original area in Kansas	10,320
Original area in Missouri	11,680
Total	22,000
Removed to date in Kansas	5,920
Removed to date in Missouri	2,400
Total	8,320
Remaining to strip	13,680
Tonnage available for stripping in the Weir City-Pittsburg seam	68,500,080

> The upper bed, sometimes known as the Lightning Creek seam, while generally present over the entire district, is found of sufficient thickness to warrant stripping only over a limited area. This seam is 65 ft. above the Weir City-Pittsburg seam, and where it is now being stripped ranges from 20 to 25 in. in thickness. My calculations indicate that about 2640 acres of this seam are available for stripping, totaling 8,680,000 tons. In calculating the tonnage of the lower or Weir City-Pittsburg seam, I have deducted 10 per cent. for faults and horsebacks, which are numerous in that bed; the Lightning Creek seam being reasonably continuous as to thickness.
>
> The cover above the coal in the Kansas field ranges from 8 to 40 ft., and is composed of soft slate, soft shale and yellow clay. From 5 to 6 ft. of soft fissured sandstone is sometimes found and frequently the shovels move this without blasting; in other cases explosives are required to loosen it. It is not uncommon to strip from 30 to 35 ft. of material from the top of the coal.
>
> In the northeast corner of the map in the hatched area there are three shovels working; the coal seam going back under a flat hill. There are 45 shovels now working in the southeastern Kansas field, the majority being of a modern type. Some of these shovels have a 90-ft. boom and the dipper handles vary from 45 to 55 ft. in length, the dipper in some cases being 6½ yd. capacity. One shovel is working at Brownington, Henry County, Missouri, but there the area of coal available for stripping is very limited.

J. B. Hoeing, the state geologist of Kentucky, reports that he knows of no stripping being done in Kentucky at present. Some was done in Laurel County years ago, as is noted later under the development of the steam shovel.

R. C. Allen, director of the Michigan Geological and Biological Survey, reports that no coal is being stripped in Michigan at present. A small amount of coal was stripped in Williamston, Ingham County, about 2 years ago, but on a very small scale. At Grand Ledge, Eaton County, a small amount of coal is obtained in connection

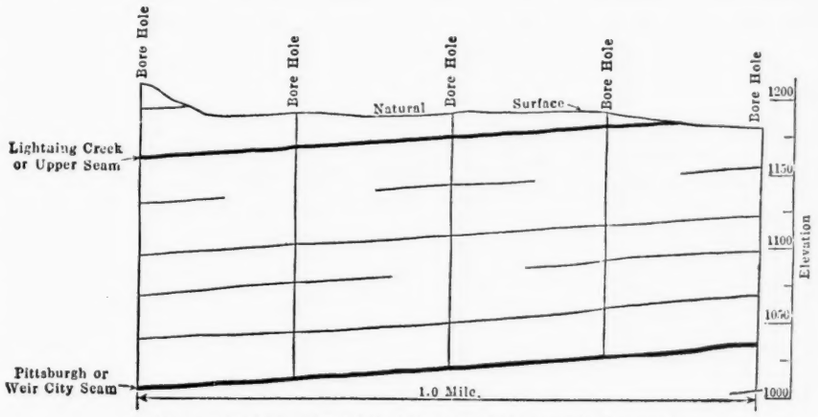


FIG. 7. CROSS-SECTION OF OKLAHOMA COAL BEDS

with the winning of clay. Excepting for these operations at Williamston and Grand Ledge, the conditions in Michigan are not favorable for stripping, as the coal basin is generally deeply covered by drift and the coal is from 50 to 250 ft. in depth.

J. A. Bownocker, state geologist of Ohio, reports that stripping is being carried on in an extensive way in the No. 8 or Pittsburgh coal in eastern Ohio. There are not more than a half dozen plants in operation at the present time, since the country is so hilly that the areas where stripping is possible are not large. There is also a plant on the border of Stark and Tuscarawas Counties at which the lower Kittanning bed is being stripped. Ohio has about a dozen coal beds that are being mined which are persistent across the southeastern part of the state. At many places they may be mined by stripping and the areas though large would form only a small part of the entire coal field. No figures are available giving the amount of coal obtained by stripping.

S. A. Taylor, of Pittsburgh, who is interested in Ohio stripping propositions, says that stripping in Ohio is at present confined to Harrison and Jefferson Counties in eastern Ohio and is largely restricted to the No. 8 field. There are five or six different companies operating in this district. The property of the Kehota company with which he is connected is located in Perry County in the Hocking district. He says:

We have tested quite a number of properties in Hocking and Perry Counties, as well as in others, but have not found any available, except two in Perry County. It is possible that others will be discovered by drills now working.

It is rumored that a number of shovels have been purchased recently to operate in Ohio.

In regard to southwestern Pennsylvania, S. A. Taylor writes as follows:

There is some coal in western Pennsylvania along the Ohio River, bordering West Virginia, which may be stripped. While the overburden is light, it is composed largely of rock and I fear that the cost of stripping may be prohibitive. An attempt to strip in this section will soon be started by John Bell and George Flynn, of Pittsburgh. As to stripping the upper Freeport coal, I do not think this is feasible, as this coal is capped by Mahoning sandstone, which is usually a massive rock of considerable thickness, and unless locations are found where the rock is eroded, leaving only the thin black slate immediately over the coal, I do not think it would be a commercial stripping proposition.

Richard R. Hice, state geologist of Pennsylvania, in reply to my questions replied:

I think there is quite a little area of the Pittsburgh bed in Washington and Allegheny Counties that can be mined by stripping and, indeed, only mined in this manner. At present most of this is too distant from transportation. The possibility of stripping this coal is due to the fact that the general rise of the rocks to the north has brought the Pittsburgh coal to daylight. It is now found close to the top of the hills with but little cover. The area lies outside of the glaciated region. It is possible that the Pittsburgh bed can be stripped farther east and I know of no reason why there should not be places where considerable areas of the Allegheny coals might also be mined in this manner, but we have no exact information on this subject. I understand there is a prospect of mining some upper Freeport coal by stripping.

Joseph Knapper, mine inspector, Philipsburg, Penn., reports that at Karthaus an operation belonging to the Black Diamond Coal Co. owned by Rembrandt Peale was abandoned by some Italian miners who contracted to deliver coal from about 10 acres of land at a price which should compete with pick mining. They worked for about 6 weeks, removing the cover, which varies from a few inches to 6 ft. and used only pick and shovel. At that time they had uncovered about 200 tons of coal, but most of it was smut which was not fit for use. They attempted to collect days' wages from the coal company, but the suit that was brought was soon dropped, and the attempt at stripping ceased.

C. W. Shannon, director of the Oklahoma Geological Survey, in reference to that state, says:

Considerable stripping has been done near Coalgate and Lehigh in the southern part of the field, but the greater part of this has been done by teams and consequently no large quantity has been removed. Some of the companies have been considering the steam-shovel proposition in the outcrops of these districts. However, this has not been undertaken. The coal of this vicinity is from 3 to 4 ft. thick and the overburden is of such character that it can readily be removed by the use of a steam shovel. Coal is also being removed by stripping near Collinsville, in Rogers County, and near Broken Arrow, in Tulsa County, the mining, however, being chiefly across the county line in Wagoner County. Practically all of the coal in the state dips steeply and of course outcrops over long and sinuous courses.

Bulletin 22 of the Oklahoma Geological Survey, p. 72, under "Mining Coal by Strip Pits," says:

In northeastern Oklahoma and southeastern Kansas there are several thin beds of coal covering large areas. Until very recently these coals had not received very favorable notice. These deposits consist of almost continuous beds and are from 1 ft. 6 in. to 2 ft. in thickness. The coal is of extra good quality for shallow coal. These beds are covered with an overburden of shale and clay from less than 10 to 30 ft. in thickness. Some of these deposits, as well as narrower strips along the outcrop of the principal beds in the main part of the field, have been worked in the past by stripping with horses and scrapers, but this method was

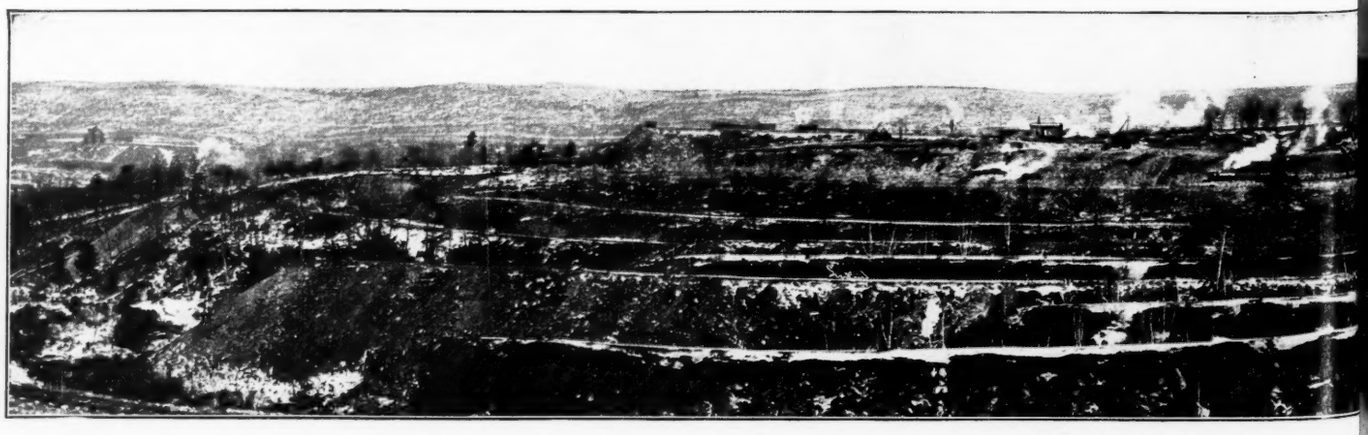


FIG. 8. PANORAMA OF A LARGE ANTHRACITE STRIPPING WITH THREE STEAM SHOVELS AND
In the anthracite region the material stripped is so thick that it has to be removed in dump cars. It is not possible to solve the

not found practicable where the covering is more than 10 ft. During the past few years steam-shovel operations have begun in these areas and a marked development has taken place. Two shovels of the largest type are operating in the Oklahoma field, one near Lehigh and the other at Henryetta.

The Handbook of the Natural Resources of Oklahoma, p. 13, says:

In the northern end of the coal field are several beds of coal averaging in thickness from 1 ft. 6 in. to 3 ft. 6 in. These coals dip but slightly and are not far from the surface. Mining operations are being carried on in these coals at Bluejacket, Catale, Collinsville, Dawson, Tulsa, Broken Arrow and Pryor. The coal mined is of a good quality, but is softer than the deeper coals. At Collinsville and Broken Arrow the coal is being stripped with a steam shovel and this method of securing coal has proved to be very satisfactory. There are many miles along the outcrops in various parts of the field where a little coal has been stripped in former years. The stripping was formerly done by teams. There are large areas throughout the coal region where steam-shovel stripping may be successfully carried on. The thickness of the surface which can be economically stripped depends on the thickness and quality of the coal, but in most cases 25 to 50 ft. can be removed.

A. H. Purdue, state geologist of Tennessee, reports that there is no coal mined by stripping in that state and I. C. White, state geologist of West Virginia, reports that so far as he knows there are no stripping mines in his state, because the country is too hilly to permit the use of such methods.

(*To be continued*)

Powdered Coal Prevents Smoke

In spite of ordinances designed to reduce the great tonnage of soot that descends annually upon our cities, few manufacturing municipalities can yet claim to have secured marked relief from the "smoke nuisance," says *Engineering and Contracting*.

But relief is apparently in sight, and from a totally unexpected source. We refer to the successful development of the progress of burning powdered coal for generating steam in locomotive and other boilers. Pulverized till 85 per cent. of it passes a screen having 200 meshes to the inch, soft coal gives an almost smokeless flame when blown into a fire box with air. The quantity of air is automatically regulated by the quantity of powdered coal, so that careless firing, such as is now inevitable with hand stoking, cannot occur.

Between Chicago and Milwaukee the Chicago & Northwestern placed in service a year ago a passenger locomotive equipped for burning pulverized coal. It has been thoroughly tested in active service, and has demonstrated a marked saving in fuel. According to tests published in the *Railway Age Gazette*, this locomotive evaporated 13 per cent. more water per pound and consumed 18 per cent. less coal on the runs between Chicago and Milwaukee than was required with a similar locomotive fired with lump coal in the ordinary manner.

Moreover, a much cheaper grade of coal was used on the locomotive burning pulverized coal. In firing up the cold locomotives only 750 lb. of powdered coal was required, as against 1700 lb. of lump coal.

But an even greater point in favor of powdered coal is the ability to shut off the fire entirely while standing still. Thus the fire can be entirely shut off for about half an hour, yet in 5 min. after it is started again the boiler is up to full pressure. This saving in fuel while standing idle makes powdered coal particularly desirable for switching locomotives.

Does Destruction of Plant Avoid Lease?

BY A. L. H. STREET
Attorney at Law, St. Paul, Minn.

In a lawsuit which recently came before the Ohio Court of Appeals at Mahoning (Thompson vs. Morris Coal Co., 34 Ohio Circuit and Appeals Courts Reports 627), it appeared that defendant company had operated coal-mining property adjoining lands owned by plaintiffs and entered into a lease with them for removal of the coal underlying such lands on a minimum royalty basis. After the coal had been mined from 150 of the 366 acres covered by this lease, the company's plant was destroyed by fire, without fault on defendant's part, and, claiming that it would be unprofitable to rebuild the plant for the purpose of removing the remaining coal, the company refused to proceed further under the lease. Plaintiffs thereupon sued to recover the minimum royalty, and defendant interposed the defense that it was absolved from liability. But the Court of Appeals decided in favor of plaintiffs, holding that there was no implied condition in the lease that the destruction of the plant without the company's fault should relieve it of its obligations under the contract, and that it must either mine the remaining coal or pay the minimum royalty fixed by the lease.

AS MANY DRILL OUTFITS AT WORK. THE FOREGROUND IS OCCUPIED BY ROCK DUMPS
problem by simply shoveling the surface material over into a place that has already been stripped; hence strip costs are higher

Extinguishing an Anthracite Mine Fire*

SYNOPSIS—*A fire is put out by driving perforated pipes into the loose coal and drenching it with water. Headings are driven through solid coal and water is run through perforated pipes above the material thought to be heated.*

A SPARK from a naked light ignited the timber in some old workings at Parker No. 5 colliery in the Mahanoy and Shamokin division on Mar. 26, 1917, and started a fire that might have resulted in loss of life and disaster to the entire operation had it not been expeditiously handled.

The fire occurred in an old mule road leading from the second-level gangway to the plane level in the north dip of the second level of the West Mammoth vein. The pillars in the mule road were being drawn back, and the fire started in a triangular pillar back of the battery of the chute known as No. 1½.

The fire was discovered by the assistant night foreman, George Williams, at 7:45 p.m., when he was making his examination. He immediately hurried to the foot of the shaft about 3000 ft. away and summoned aid. The force thus secured brought fire extinguishers and buckets to the seat of the fire. By 8:30 p.m. John Irvin, the mine foreman, who had been notified by Williams, had summoned all his assistant foremen and other workmen to aid in extinguishing the blaze.

Fire Still Burned Though Apparently Out

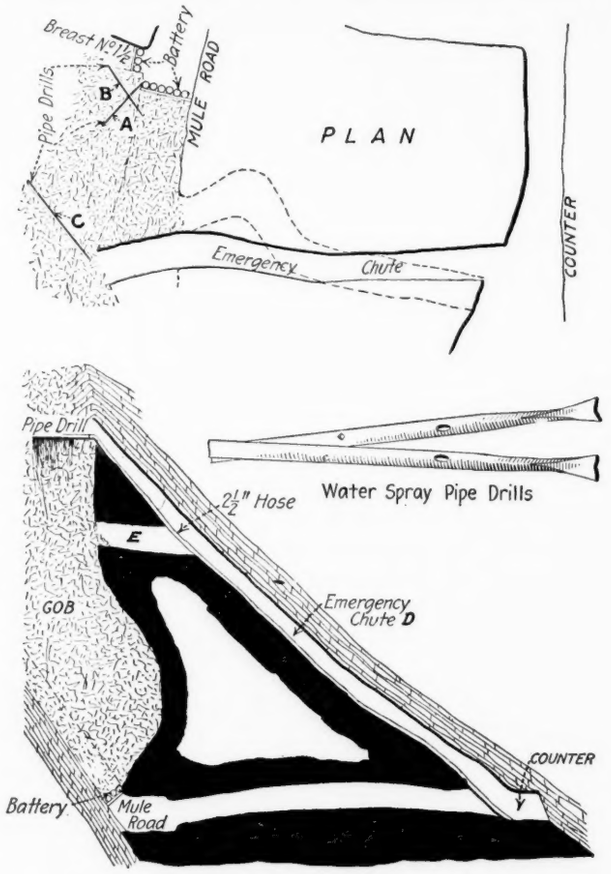
At No. 1½ chute there was quite a little old timber cribbing into which the fire had worked its way. This condition made necessary the cutting out of one of the chute legs to get at the burning timber. Extinguishers and water buckets were used, and as soon as possible an electric fire pump was taken to the fire zone. At about 1:30 a.m. connections for the pump were completed and water was being played on the fire.

At this time loose coal was being drawn out of the chute. This work continued until about 4 a.m., when on account of the cold material coming down the chute the mine officials and fire-fighting squads were naturally led to believe that all the fire had been removed. However, the management decided to continue for a while to draw the loose coal. At 9 a.m. of Mar. 27, roughly 13 hours after the fire was discovered, some red-hot pieces rolled down the chute from the point where the fire had been. The electric pump was at once started and water was played on the hot coal until 2 a.m.

For the purpose of getting beyond the fire area to head it off, chutes Nos. 1 and 1½ were reopened. These were well timbered and lagged at the sides and top to assure complete safety to the workmen.

From the muleway a perforated pipe *A* was driven directly into the loose material behind the battery and through it water was sprayed in all directions. Chute 1½ had progressed 23 ft. up the pitch, at which point there was no indication of fire. To make certain, however, another perforated pipe was driven from this chute into the gob *B*. As a further precaution another chute 5 x 5 ft. was driven off No. 1 counter gangway *D*, cutting the benches to the top rock to reach even farther up the pitch above the fire zone than could be reached by Nos. 1 and 1½ chutes. Eighty-five feet above the counter gangway a horizontal "heading" *E*, 8 ft. wide by 6 ft. high, was driven a distance of 13 ft. through the benches to the gob, which was packed back tightly and showed no indication of fire. The chute was then continued up the pitch above the counter gangway, which reached the gob at 11 ft. Here also no fire was seen.

The perforated spray pipes were then placed in both these "headings" and changed from time to time to different locations and angles in order that the water would percolate to the material lying back of the battery. At 9 a.m., Apr. 1, the water was turned on the coal. No signs of it appeared in the mule road at the battery below until four hours later. This water, however, had traveled the ground it was intended to cover and came out below, cold; thus showing that there was no fire in its path. The stream was kept running continually until the morning of Apr. 9, when everybody was fully satisfied that the fire was completely extinguished.



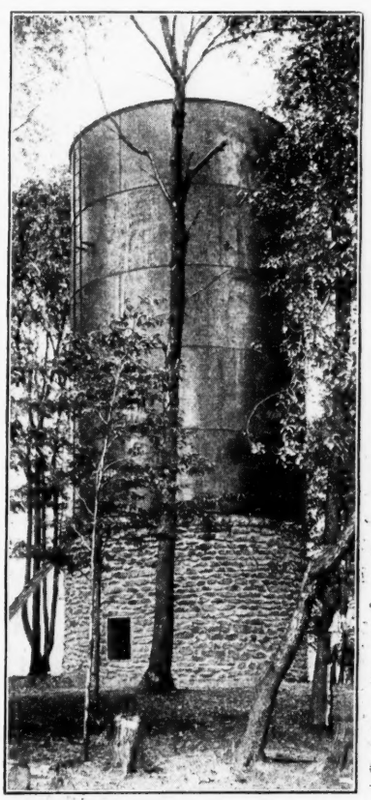
PLAN AND ELEVATION OF REGION NEAR FIRE; ALSO PIPE DRILLS BY WHICH IT WAS CONTROLLED

The company's mine rescue car No. 1 and its fire car were summoned from Hazleton as soon as the serious nature of the fire was discovered. It furnished the fire fighters with equipment, food and shelter.

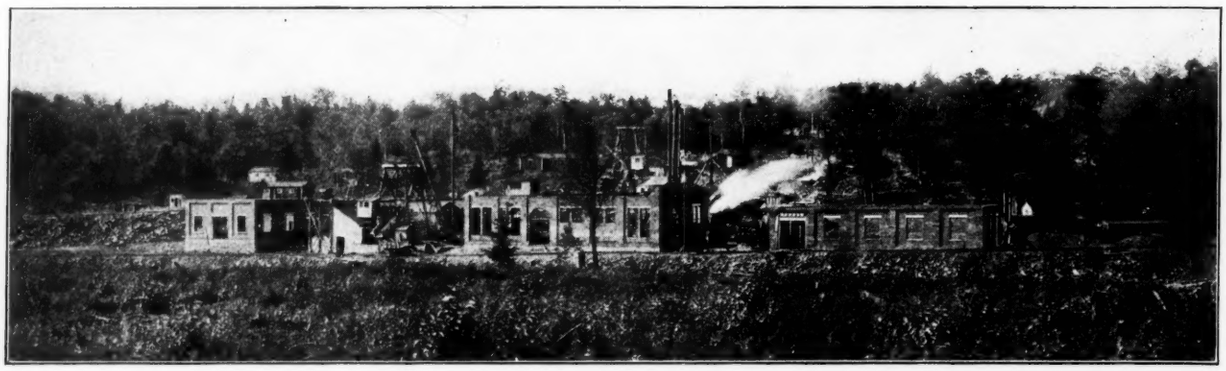
*Abstract from the "Employees' Magazine" of the Lehigh Valley Coal Company.

New Mining Town of Revloc, Penn.

ON THE summit of the Allegheny Mountains, overlooking the palatial mansion of Charles M. Schwab, the steel king, there is nearing completion a $1,000,000 coal operation of the Coleman-Weaver interests, a coal plant that will be one of the largest and most modern in the country and that may be the center of bituminous-coal production of the United States. What one year ago was a wilderness is now being transformed into a new city, a model of its kind. "Revloc" is the name, the letters spelling backward the name of a sister town of the same company, Colver, the twin coal towns being the property of the Munroe Coal Co., in which the principals are J. H. Weaver, of Williamsport, and B. Dawson Coleman, of Lebanon. Revloc is springing up like magic in Cambria Township, two miles from Ebensburg, the capital of Cambria County, Penn. The best houses in Revloc, those to be occupied by the resident officials of the Munroe Coal Co., which will operate the Revloc coal field, will be located upon an eminence on the Kirschner farm, high above and at least 1000 ft. removed from the mouth of the shafts and operations, and well removed from the railroad. The houses to be occupied by the miners will be graded as to location, size and appointments, according to the desires of the families who occupy them. The headpiece affords an excellent idea of the type of houses being built. Revloc has already been laid out into streets, each of which has a width of 50 ft. Fronting upon these streets will be the homes of the miners and others who will find employment about the big coal plant and move there with their families. Each lot will have a width of 40 ft. and a depth of 150 ft., and it is the intention of the company that each tenant shall have a lot of ample size to admit of gardening. Every house in the town will be provided with a supply of running water and will be lighted with electricity. A feature of the Revloc homes will be found in the fact that as each house is built it will be equipped with an individual sanitary sewage disposal plant of the most approved type. Everything which will make for sanitation and cleanliness will be provided by the company. The houses of the employees will be built in three sizes, containing respectively four, six and eight rooms, and will be both double and single houses, for the occupancy of one or more families. The houses will be built with cellars, and will be of tile, terra cotta and shale tile construction. The six-room houses will have baths and all modern conveniences, as will also the larger and better houses. At the present time 100 houses are being erected for miners. and 400 more will be contracted for as rapidly as possible, so that when the operation is ready to deliver coal to the market, there may be no shortage in modern buildings to house the miners and their families. The water for the town will be obtained from Williams Run, two miles from the site of Revloc, from which point it will be piped to a retaining reservoir and distributed by gravity into 4- and 6-in. cast-iron water mains which have already been laid throughout the streets of Revloc. The retaining reservoir is set upon a wall of masonry 16 ft. high and 20 ft. in diameter, upon which rests a steel tank 35 ft. in height and 20 ft. in diameter, This reservoir has a capacity of 75,000 gal. of water, and is intended for the supply of water to the buildings in Revloc only. So far 11 fire hydrants have been placed at the intersection of streets for fire protection. A pretty feature contem-



WATER TANK OF REVLOC
Capacity, 75,000 gallons



GENERAL VIEW OF THE POWER-PLANT BUILDINGS OF THE TOWN OF REVLOC

plated in connection with the town of Revloc is an oval-shaped park in the center of the town. In size this park will be 250 x 300 ft., and around it will be built a boulevard. It is planned to have the park beautifully lighted and made a real rest place for the people living in Revloc. Pretty plants and evergreens will be planted in the park and benches will be scattered here and there to invite the weary ones to rest. Fronting on the park will be a moving picture theater, a handsome company store building, 40 x 75 ft. in size, built two stories in height out of Fisklock brick. A hotel, which will be built of stone, two stories in height, fireproof, with every modern convenience, will face on the park, as will the general office building of the Munroe Coal Company.

Near the "Knob," which is the highest point on the Kirschner farm, will be laid out a children's playground, two acres in size and suitably equipped for the recreation and play of the children of the modern coal town. The promoters and builders of Revloc seem to have aimed to lay out and establish a town which will be in advance of other towns, and there is at present every indication that their efforts have not been in vain.

It is planned to build a good road between Colver and Revloc, and to extend the road from Revloc down the Blacklick a mile, to connect with the Nant-y-Glo road at Beulah. These highways when constructed will be a great advantage to Revloc as well as to the traveling public seeking communication with the new town.

It has been estimated that the two shafts at Revloc have cost at least $200,000 and that another $100,000 will be expended at the bottom of these shafts before the plant will reach a point where its operation can be carried on as planned. It is stated that the Munroe Coal Co. in developing its plant at Revloc and erecting the town will expend $1,000,000. It is planned to pave with paving brick the most prominent streets of Revloc. The town will be well lighted and will be modern in every particular.

The Coal Situation in the Northwest

THE effects of Government price fixing on the coal industry in the Northwest have been to produce a condition which threatens a shortage of coal in this region this winter. Consumers, expecting lower prices, are not buying; and dealers, having no outlet for stored coal, are reducing orders. Operating mines in Washington, Oregon, Montana, Wyoming and Utah are either shutting down or announcing the prospect of shutting down.

Part of the difficulty is due to the attempt of the Government to disregard the difference in prices that has been attached to the various grades of coal. While fixing the price at the mines for run-of-mine, which means everything that comes out, the premium commercially placed on lump, egg and other prepared sizes has been reduced. Simultaneously, the price chargeable by the mines for slack and screenings, which formerly was almost nominal, is radically increased under the Government rates. The theory was that the householder consumer will be given the benefit of increased charges to industrial plants and establishments which have used the lower grades of coal at nominal prices. Many of the mines now are unable to get this higher price, and all of them have notified Northwest dealers that they will consequently discontinue producing prepared coal and ship nothing but run-of-mine. Inability to accept these shipments for city use is leading to still further reduction in the dealers' orders.

Dealers believe the psychological effect of Government action has been exactly the opposite from what was intended, as there is no doubt the Government hoped to stimulate the movement of coal rather than to retard it. The consumer has stopped purchasing, forcing the dealer to stop shipping and the mines to curtail their output, which has resulted in a practical stagnation in the domestic coal business throughout the Northwest.

As has been pointed out, there will undoubtedly be a serious coal shortage in the Northwest this winter unless production is greatly increased. An investigation undertaken in Seattle disclosed the fact that coal production in Washington alone was averaging only 60,000 tons a month in the face of an increased consumption of 150,000 tons a month due to a decrease in available wood supply because of lengthy strikes in the lumber mills and generally increased activity in industrial plants. Coal shipments from British Columbia have decreased 50 per cent.

Practically all railroads operating in the Northwest are hard pressed at this time for adequate coal supplies, and so great has been the demand upon them that all the roads whose rights-of-way pass through

timber have had gangs of sawmen for several weeks cutting wood, which is stored along the railroad tracks for emergency.

In Oregon coal has been arriving slowly from the Utah and Wyoming fields. Little or none has come from the former fields in three months, and while dealers throughout the state increased their storage facilities with the expectation of being well supplied this winter, they are hardly able to keep up with the present demand, which is not heavy. Portland faces a serious fuel famine this winter principally because of the decrease in the production of slab wood at the mills adjacent to the city. Many of these mills have not operated to capacity for months. Demands for coal have been light owing to the Government price setting, and deliveries have left the dealers with no coal in storage for the winter. Usually at this time of the year most of the consumers have placed their orders and had them filled, and dealers have had an adequate supply for emergencies. Now conditions are just the opposite.

The coal mines at Roslyn, Wash., and Red Lodge, Mont., which furnish the Northern Pacific Railway Co. with 60 per cent. of its fuel, can only furnish the road with enough coal to meet present demands, and the road is in a quandary as to what to do when winter with its increased consumption of coal and the operation of more trains makes itself felt.

Floods in late June did much damage to the tracks leading to some of the largest producing mines of Utah. These washouts isolated the mines and rendered shipment from them impossible. Repairs to the tracks have only just been completed and shipments resumed.

The reasons why the coal supply in the Northwest is far below the demand are: (1) decrease in wood supply, (2) withdrawal of fuel oil, (3) tremendous increase in number of industrial plants, (4) increased business on railroads necessitating more trains and greater consumption of coal, (5) scarcity of labor, (6) reduction of imported coal from British Columbia due to strikes and the war, (7) withdrawal of Australia as a coal supplier and (8) increased traffic and shipment of war supplies with insufficient cars available for coal shipments.

Danger in Brass Carbide Lamps

There is an interesting statement in a bulletin issued by the United States Bureau of Mines entitled Notes on Miners' Carbide Lamps, Miners' Circular No. 18: "Never use carbide in a lamp made of copper; the lamp may explode."

In a recent issue of the *Engineering and Mining Journal*, John B. Stewart, of Havana, Cuba, said:

A mine worker in cleaning his lamp picked up a soft-iron spad and began to scratch off the deposit that had formed on the bottom of the water compartment, which, by the way, was already as clean as careful scraping with pieces of wood could make it. At the very first scratch made with the blunt end of the spad, a large smoky yellow flame, comparing favorably in size and color with that of the common wax match used in Cuba, burst forth.

Upon further investigation it was found that a dense black scale, probably not over 0.01 in. thick, which covered the bottom of this water compartment, whenever scratched with the head of the soft-iron spad, would yield large, fat sparks resembling those obtained from the iron selenide sparking alloy, but no sparks could be obtained by scratching with the point.

After clearing away a considerable area of this deposit and repeating the test on the really clean brass, no suggestion of a spark could be obtained. In the absence of means for further investigation we concluded that the deposit was carbon which from recent use of the lamp was sufficiently charged with absorbed acetylene gas to ignite under the conditions described. Other lamps which showed analogous conditions, except that they had not been used recently, failed to yield sparks when such deposits were attacked.

These lamps were all of brass and had once been galvanized. We were unable to attribute the sparks to the brass, but it may possibly be proved that such deposits do not form upon metals of lower heat conductivity.

Continuing this discussion Charles E. Munroe, dean of the faculty of graduate studies, George Washington University, Washington, D. C., says:

It may be recalled that when "gas lighting" was introduced, iron pipe, except for gun barrels, was not an article of commerce and therefore brass and copper tubes were used. The gas as sent through these service pipes was foul with tar, ammonia and other materials, removal of which was the subject of later developments. Among other troubles encountered in making public-service gas lighting acceptable were the mysterious explosions of these service pipes when heated or struck. On investigation Dr. Robert Hare discovered them to be due to copper acetylide formed in the pipes through the action of the acetylene in the gas with the ammoniacal solution of copper previously formed there. With the commercial introduction of acetylene this observation was recalled and many tests made, all of which tended to show that no explosive compound was formed between acetylene and copper if the ammonia was not present.

Mr. Stewart speaks of this flash as having occurred during the cleaning of the lamp. This recalls that various ammoniacal preparations, such as "Household Ammonia," are now quite commonly used in cleansing metals. Is it possible that one of them was used in cleansing these lamps prior to their re-use? If such should prove to be the case, some small residue of cuprous-ammonium compound may have been left in the lamp with which acetylene could react.

Kentucky's Output in 1916

The output of the various counties and districts in Kentucky for the calendar year 1916 has just been published by C. J. Norwood, the chief inspector of mines. The figures cover all companies or firms employing more than 5 persons and shipping to the general market. Some mines in the vicinity of Owensboro, Henderson and Hawesville that do only a local business have, however, been included. From these figures the table below has been compiled to show clearly the relative importance of the many counties from which coal is obtained.

The relative precedence of each county in the district is shown by its order, but the state precedence is shown by the figures in the second column. Thus Henderson County is sixth in order of output in the Western District and sixteenth in order in the State of Kentucky.

COUNTY TONNAGES IN KENTUCKY IN 1916

Western District			Northeast District		
County	Precedence in State	Tonnage	County	Precedence in State	Tonnage
Hopkins	3	2,605,812	Letcher	1	3,817,059
Muhlenberg	6	2,015,859	Pike	2	3,675,607
Webster	7	1,575,748	Johnson	8	1,061,481
Union	14	662,966	Perry	9	995,091
Ohio	5	471,610	Floyd	1	814,610
Henderson	16	169,572	Carter	17	130,436
Christian	18	102,068	Boyd	21	72,439
McLean	20	72,482	Morgan	22	47,727
Daviess	23	40,811	Breathitt	24	12,825
Hancock	26	10,500	Lawrence	25	10,612
			Jackson	27	9,397
Total		7,727,428	Lee	28	6,623
Southeastern District			Total		6,978,300
Bell	4	2,237,340	Grand Total		21,617,160
Harlan	5	2,204,553	Counties not producing coal		91
Whitley	10	947,783	Counties producing coal,		28
Knox	12	771,685			
McCreary	13	672,750	Total		119
Laurel	19	77,321	Percentage producing coal		23 52
Total		6,911,432			

Counterbalance and Equalization of the Load in Hoisting

By H. D. PALLISTER
Professor of Mining, Texas State School of Mines, El Paso, Tex.

SYNOPSIS — *The various coal fields of the country employ divers methods of hoisting. In most instances the favored process in a given field is the one best adapted to the conditions there existing. Of all the methods available only a few are extensively employed in coal mining.*

IN MOST of the coal districts where shaft mining is carried on, some form of counterbalance and method of equalizing the load on the hoisting engine is used. Each district seems to have its favorite method, which may be particularly suited to the conditions prevailing in that section. For example, the double conical-drum hoist so common in the Connellsville coke district of Pennsylvania would not be at all suitable for the irregular pitches in certain sections of the anthracite field of the same state.

There are two ways in which the load on the hoist can be modified: (1) Counterbalancing; (2) equalizing. By counterbalancing we usually mean the addition of a weight in such a manner that a certain part of the weight to be hoisted is neutralized. The result is that the work done by the engine is reduced in most cases to hoisting the weight of the coal and rope. Equalizing means making the load as near uniform as possible at all times during the hoisting process, thus making the work on the engine as near constant as possible. If some method of equalization is not employed, the load is a maximum at the beginning of the hoist and a minimum at the end. In many cases a combination of counterbalancing and equalizing is used. The following are the important methods of each:

1. Counterbalancing: (a) The counterweight; (b) double cylindrical-drum hoist; (c) Koepe system; (d) Whiting system.

2. Equalizing: (a) Tail rope; (b) flat rope and reel; (c) double conical drum.

Counterweighting, though seldom used today in mine hoisting, is quite commonly employed in elevator shafts. The cage is attached to the hoisting rope in the ordinary manner followed in simple hoisting, and in addition a second rope from the top of the cage leads over an auxiliary sheave to a counterweight that travels between guides at one side of the hoisting compartment. This counterweight is usually sufficient to balance the weight of the cage and car. The unbalanced load to be lifted will then be that of the coal and rope alone. The horsepower in this case (neglecting friction) will be found as follows:

Let

A = Weight of cage in pounds;
B = Weight of car in pounds;
C = Weight of coal in pounds;
D = Weight of rope in pounds;
E = Weight of counterpoise = $A + B$;
S = Hoisting speed in feet per minute.

Then

$$Horsepower = \frac{(A + B + C + D) - E}{33{,}000} \times S$$

But

$$E = A + B,$$

Therefore

$$Horsepower = \frac{(A + B + C + D - A - B)S}{33{,}000} = \frac{(C + D)S}{33{,}000}$$

In the simple unbalanced hoist the horsepower would be

$$Horsepower = \frac{(A + B + C + D)\,S}{33{,}000}$$

Example: The cage weighs 3000 lb., car 1500 lb., coal 4000 lb., rope (400 ft. of 1-in. wire rope at 1.58 lb. per ft.) 632 lb., average hoisting speed, 500 ft. per minute.

For the simple hoist, then,

$$hp. = \frac{(3000 + 1500 + 4000 + 632) \div 500}{33{,}000} = 138.3,$$

say 140 horsepower.

With counterweight, $hp. = \dfrac{(4000 + 632) \div 500}{33{,}000} = 70.18,$

say 70 horsepower.

The last method shows a saving of one-half the power and means a smaller engine. The friction in the second case will be a little greater than in the first because the total load moving is greater and this is what affects the friction. However, the net saving in power is great.

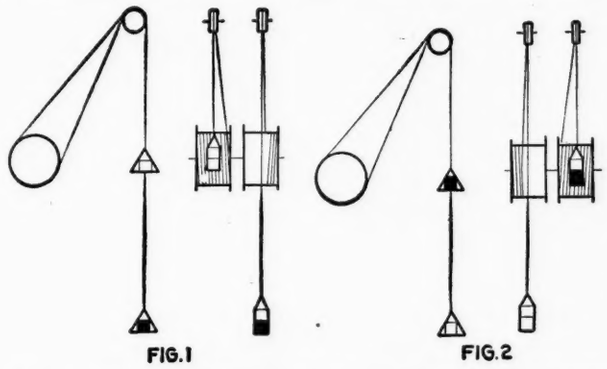
Double Cylindrical-Drum Hoist

The principle in the double cylindrical-drum method is practically the same as in the first case, and the power required to raise the load is also practically the same. The essential difference lies in the fact that as the loaded car and cage reach the landing, the empty car and cage reach the bottom. The latter serve as the counterpoise, and thus no time is lost.

With the counterweight method, after the load is raised and removed, the cage and car must be lowered and the counterweight raised before another load can be brought up. This results in a loss of both time and power and accounts for the popularity of the double-drum hoist. The first cost of the double-drum hoist is greater than that of the single-drum because the shaft has to be built with two hoisting compartments. The headframe must be larger to cover the two compartments. The engine frame must also be larger to accommodate the two drums, which are both placed on the same shaft.

In order that one drum may lower one cage while the other drum, revolving in the same direction, raises the other cage, it is merely necessary to wind the ropes on the drums in opposite directions. Hence one rope leads from the top of one drum while the other rope leads from the under side of the other.

The load on one rope (see figures below) tends to neutralize an equal load on the other. Therefore, when the loaded cage is ready to leave the bottom (see Fig. 1), the difference in moments due to the two cages is the moment of the net load about the drum center.



FIGS. 1 AND 2. OPERATION OF DOUBLE CYLINDRICAL DRUM HOIST

Let

R = Radius of the drums;

L = Net load on the engine.

All other terms remain the same as in previous cases.

$LR = (A+B+C+D)R - (A+B)\ R$ or $L = (C+D)$

When the loaded cage is practically at the surface (see Fig. 2),

$LR = (A+B+C)R \div (A+B+D)R$ or $L = (C-D)$

The load is then decreasing; that is, passing from the value $C + D$ to $C - D$. The engine must be built to take care of the maximum load and is usually designed to lift all the load of one compartment while not in balance. The hoist is seldom called upon to do all this work, except in the type which has one or both drums loose on the shaft. In this case one drum may be used separately for a part of the hoist and the machine then thrown in balance by a clutch. this type is used where the mine has several levels.

THE KOEPE HOISTING SYSTEM

The Koepe system accomplishes the same results as the double-drum hoist by causing the empty car and cage to balance the weight of the car and cage on the loaded side. One large grooved wheel replaces the drums and is driven in one direction or the other by the hoisting engine. The same rope is used for suspending both cages. One end of the rope is attached to the top of one cage; thence it passes over the first sheave, then over the top of the drive wheel, halfway around this, out from under it to the second sheave, and thence to the top of the second cage, where the other end is attached. The driving power depends on the friction between the rope and the drive wheel, and the slip at this point is one of the disadvantages of this system.

The rope is sometimes passed around an extra grooved wheel to increase the friction and reduce slippage. Another disadvantage of this system and also of the next is that if the rope breaks, both cages will go to the bottom. To overcome this, the two cages are sometimes attached to the ends of an extra rope passing over a separate sheave at the top. In case the hoisting rope breaks, this rope takes the load and the friction of the extra sheave against a brake block brings the cages to rest.

THE WHITING SYSTEM

The Whiting system is similar to the Koepe except that a grooved wheel is used for each compartment, each wheel having several grooves to prevent slipping. The rope, instead of passing directly from one wheel to the other, passes around an idler placed on a carriage traveling on a long track. This system is more flexible than the last. The Koepe can be used for hoisting from one level only, while the Whiting can be used for a number of levels by simply taking up or letting out the slack with the idler wheel near to or distant from the drive wheels.

The last two methods of balancing the loads are seldom seen in coal mining, although a modification of the Whiting system is quite common in haulage on heavy slopes, the idler being used in hauling from different working places.

EQUALIZING THE LOAD

The methods so far considered have no tendency to make the load on the engine uniform during the hoisting. We will now consider some of these in the order already listed. A number of other methods have been devised and used, but have served their purpose and have been discarded with the exception of three. All these systems are used in two-compartment shafts.

TAIL-ROPE SYSTEM

In raising the load and lowering the empty with the double-drum hoist when the loaded car is at the bottom, the net load to be hoisted is equal to the weight of the coal plus the rope. When the rope is near the top, the load on the engine is the weight of the coal minus the weight of the rope. Midway between these two points the load is equal to the weight of the coal plus one-half the weight of the rope and minus one-half the weight of the rope, or in other words it is equal to the weight of the coal alone.

This last condition may be secured at all times during the hoisting by putting in an extra piece of rope equal in length to the hoisting rope. One end of this rope is attached to the bottom of one cage, passed around a timber or wheel at the bottom, and the other end fastened to the bottom of the second cage. Thus at all times each drum will support the whole rope or its equivalent. The result is that the rope is practically eliminated and the horsepower (neglecting friction) will be:

$$\frac{(A+B+C+D)-(A+B+D)}{33{,}000} \times S = \frac{CS}{33{,}000}$$

Assuming the same conditions as in the previous example, equal cars and cages on each side, and applying the above formula,

$$\textit{Horsepower} = \frac{4000 \times 500}{33{,}000} = 60.6 \textit{ or, say, } 61 \textit{ horsepower.}$$

This method will then give a saving of 9 hp. if used with a balanced hoist, Koepe or Whiting system.

The Conical-Drum Hoist—The double conical-drum hoist is familiar to most coal-mining men because there is scarcely a coal-mining district in this coun-

try where vertical hoisting is practiced that does not employ many of these hoists. In a few districts only a small number of these hoists are used because they are not flexible enough for the varying conditions such as hoisting from several levels, etc. In other words, the conical-drum hoist must be built for certain specified conditions, including load, depth of shaft, etc., and these conditions cannot be changed

The object of the conical drum is to equalize the load and reduce it to a minimum during hoisting. This it does by the ratio of drum diameters. When the loaded car is at the bottom ready to be hoisted, it is hanging from the entire length of rope, which is wound on the small end of the drum. Hence its moment is as small as possible and equal to the sum of the weight of the cage, car, coal and rope multiplied by the lever arm, which is the radius or one-half of the small diameter of the drum. Opposing this there is the greatest moment of the empty car and cage. This moment tends to assist the engine in raising the loaded cage and is equal to the weight of the cage and car multiplied by the largest drum radius, or one-half the largest drum diameter. Now if these two moments are made equal to each other, the engine will only have to overcome friction and inertia in order to start the load from the bottom.

When the loaded cage reaches the top of the shaft, its moment is equal to the weight of the cage, car and coal multiplied by the large radius, and the moment opposing it will be the weight of the cage, car and rope multiplied by the small radius. Now if we make these moments equal, the result is the same as above.

Taking different points throughout the hoist in a like manner, we can balance the various factors at all times during the lift. The surface of the drum produced from these results approaches closely the surface of a cone and for all practical purposes can be taken as such.

If the small diameter is assumed to be from 50 to 60 times the diameter of the rope (a good rule in calculating minimum drum diameters) and the two moment equations, one with the load at the bottom and the other at the top applied, the large diameter can be obtained. Using the same nomenclature as in previous examples and the following new quantities, a formula for the relation of large diameter to small diameter of conical drums can be found as follows:

Let,

A, B, C and D have the same values as previously;

d_1 = Small diameter of drum in feet or inches = 50 or 60 times the rope diameter;

d_2 = Large diameter of drum in feet or inches.

Assume loaded cage at bottom (see Fig. 3). Moment of loaded side $= (A + B + C + D)\frac{d_1}{2}$. Opposing this is the moment of the empty side $= (A + B)\frac{d_2}{2}$. If these two moments are made to balance each other then

$$(A + B + C + D)\frac{d_1}{2} = (A + B)\frac{d_2}{2} \qquad (1)$$

When the loaded cage is at the top (see Fig. 4), the moment of the loaded side $= (A + B + C)\frac{d_1}{2}$. Opposing this is the moment of the empty side $= (A + B + D)\frac{d_1}{2}$. Again if these two moments are made to balance each other then

$$(A + B + C)\frac{d_2}{2} = (A + B + D)\frac{d_1}{2} \qquad (2)$$

Transposing in equation (1), adding the two equations (1) and (2) and solving for d_2 will give an equation which is extremely useful in designing or checking conical drums. Thus

$$(A + B)\frac{d_2}{2} = (A + B + C + D)\frac{d_1}{2}$$

$$(A + B + C)\frac{d_2}{2} = (A + B + D)\frac{d_1}{2}$$

$$(2A + 2B + C)\frac{d_2}{2} = (2A + 2B + C + 2D)\frac{d_1}{2}$$

$$d_2 = \left(\frac{2A + 2B + C + 2D}{2A + 2B + C}\right) \times d_1$$

This may be expressed in a rule as follows:

The large diameter of a conical drum may be found by multiplying the small diameter by the sum of two times the weight of the cage, car and rope plus the weight of the coal and dividing this product by the sum of twice the weight of the cage and car plus the weight of the coal.

Example: Using the same weights as in the previous problems; namely, a cage of 3000 lb., car of 1500 lb., coal 4000 lb., shaft 400 ft. deep and a conical double-drum hoist.

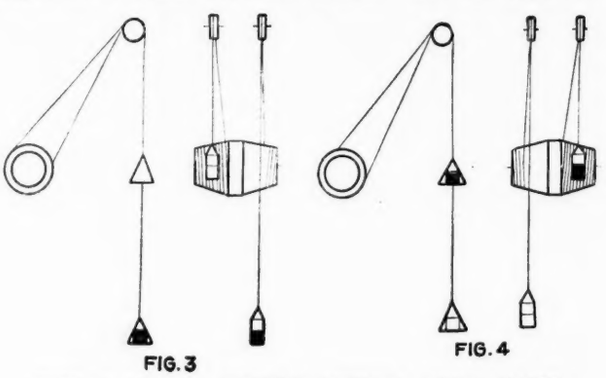
Solution: The maximum load not including the rope will be 8500 lb. From the rope tables a ¾-in. cast steel 6 x 19 hoisting rope has a safe working load of 8700 lb. and weighs 1.2 lb. per ft., or 480 lb. for 400 ft., thus bringing the total load up to 8980 lb., which is beyond the safe working load for a ¾-in. rope. It will therefore be better to use a 1-in. rope with a safe working load of 11,300 lb. and weighing 1.58 lb. per ft. The total weight of this rope is then 632 lb., and the maximum load is then 9132 lb. A 1-in. rope means a small diameter of 50 or 60 times this, or say a 5-ft. drum. Then d_1 in the formula = 5 ft. Applying the formula,

$$d_2 = \frac{23{,}000 + 21{,}500 + 4000 + 2632}{23{,}000 + 21{,}500 + 4000} \times 5$$

$$= 1.097 \times 5.$$

$$= 5.485 \text{ or } 5 \text{ ft. } 6 \text{ in. for the large diameter.}$$

The Flat Rope and Reel—The flat rope and reel, though seldom if ever used in coal mines in this country, has been quite a favorite in several of the copper-mining districts. It is here, however, gradually being replaced by round rope and drums. The flat rope consists of a number of parallel strands of wire woven together to form the flat rope. The various strands are held in place by what is called a sewing wire strand.



FIGS. 3 AND 4. DOUBLE CONICAL DRUM HOIST

This strand is made of soft wires and is so placed that it takes the wear and can be replaced when it is worn out. It passes back and forth across the strands, alternately over and under adjacent strands, thus holding them together. The reels have a drum of just sufficient length to take one width of rope and are provided with radial arms so that the consecutive layers must fall upon those preceding them.

The result is an increasing diameter as the rope is wound up. The interesting fact is that the flat rope and reel accomplishes exactly the same result as does the conical drum and the same formula may be used therefor. Consequently its further consideration is not necessary. It is of course understood that one reel is wound in the opposite direction from the other and that when one rope is unwound, the other is all on the reel.

Having considered the various methods of equalizing and balancing the load, it is apparent that there are only a few methods that are in common use in the coal mines; namely, the double drum either conical or cylindrical and a few tail-rope systems. If there are any methods that I have not mentioned, it would be interesting to have a description of them printed in the columns of *Coal Age*.

National Safety Council's Annual Meet—I

BY R. DAWSON HALL

THE National Safety Council held its Sixth Annual Safety Congress on Sept. 10 to 14 at the Hotel Astor, New York City. The attendance was large; the final number is not available at present writing, but early on Friday, Sept. 14, 1148 persons had registered and more were still arriving. As usual, of course, many of those who attended failed to register.

The mining section was fairly well attended. Every paper on the program was read except Prof. R. M. Raymond's paper on the "Standardization of Mine Cars in Metal Mines." Some of the contributors of papers were, however, absent. A. J. Moorshead and Carl Scholz were unable to be present. An excellent paper by George E. McElroy on the mine-rescue methods at Franklin Furnace was added as discussion of Mr. Moorshead's article. The extempore discussions were animated and interesting. Many had to be summarily shortened to accord with the allowance, and the one on hoisting ropes was carried over from one session to the next that due justice might be done to the subject. The annual meeting of members was well attended and the address of the president and chairmen of committees excellent. The round-table discussion in the afternoon of Sept. 11 was animated and interesting, but at the general session of Sept. 12 both William B. Wilson, the Secretary of Labor, and Dr. Charles P. Steinmetz were absent on account of sickness. R. M. Little, chairman of the United States Employees' Compensation Commission, was present, at least at the banquet, but he took no part in the proceedings.

PASTER USED ON LETTERS OF COUNCIL TO ANNOUNCE ANNUAL MEETING

However, Mrs. Samuel Semple, of the Pennsylvania Industrial Board, Harrisburg, Penn., spoke well and interestingly on "Protecting Women in Industry," and Marcus A. Dow, General Safety Agent, New York Central Lines, New York, surprised those who did not know him by proving an orator of extraordinary ability. His "Progress and Possibilities of Accident Prevention Work" was a wonderfully invigorating speech, and the film "The Rule of Reason," exhibiting the baleful effect of liquor in the conduct of the railroad business, was full of thrilling scenes which made the spectators wonder how they could be staged without taking as many lives as they were designed to save.

The banquet on Sept. 12 went off almost wholly according to schedule. Arthur Williams, president of the American Museum of Safety, New York, was toastmaster. A. Lawrence Lowell, president of Harvard University, Cambridge, Mass., and Job E. Hedges, of New York, were the after-dinner speakers. Professor Lowell's address, delivered from a manuscript, was well worthy of a man who has from the first desired to see the United States come out whole-heartedly for the war on behalf of democracy. Job Hedges, one time candidate for governor of New York State, is probably one of the best of after-dinner orators. There is an oratory which consists in saying well what everybody else is saying. Job Hedges' eloquence is not of that type. His witty, incisive speeches take a new track; they run quite frequently counter to public sentiment, but they are certainly forceful. Job Hedges is not to be blamed if the public sometimes prefers a coin which does not ring so true. Perhaps it was his disposition to say his mind openly that was the cause of his failing to receive preferment at the hands of the electors. Then again, the public writes "wit and wisdom" together and yet always regards them as antagonistic. John Mitchell, chairman of the New York State Industrial Commission of Albany, N. Y., had been called to Washington, D. C., and could not attend. Unfortunately, Miss Ida Tarbell, in the Health Service Sectional Meeting of Sept. 12, was unable to be present. These disappointments are such as may be expected in busy times like these.

The presidency of the Council during the coming year falls to D. Van Schaack. The mining section will have as chairman Benjamin F. Tillson, who so successfully managed the affairs of the Section last year. The advisability of making a change and putting a coal-mining man in the chair was duly canvassed, but it was thought better

to continue Mr. Tillson, who had shown in the conduct of his office a proper regard for both branches of the mining profession and had successfully commenced an active program, but had not had time to get it fully under way. H. G. Davis, the efficiency engineer of the Delaware, Lackawanna and Western R.R. coal department, of Scranton, Penn., was made first vice chairman; H. I. Young, of the American Zinc, Lead and Smelting Co., Carterville, Mo., became second vice chairman, and E. E. Bach, sociological superintendent Ellsworth Collieries Co., Ellsworth, Penn., became third vice chairman. Thus the chairmanships are almost wholly Eastern and evenly divided between the coal- and metal-mining industries, and the two coal chairmanships are equally divided between the anthracite and bituminous interests.

Disadvantages of a Representative Committee

A choice of Eastern men was made so that meetings of the chairmen might be better attended and more frequent. Committees that are truly national are apt to have only a paper value. Next year a Western committee or rather perhaps a Middle Western committee should be chosen. In order that the chairman might have complete and convenient coöperation, T. T. Read, of the New Jersey Zinc Co., New York City, was made secretary. Few changes are expected in the personnel of the committees.

At the opening session of the Mining Section the discussion of John Lloyd's paper on fire protection occasioned George S. Rice, the chief mining engineer of the Bureau of Mines, to remark that he wondered whether it would not be well to use differential values on fire lines so as to reduce the pressure of the water for fire fighting. Mr. Lloyd declared that when using hose under a 600-ft. head four men were needed to hold the nozzle. The pressures in the mine are often so high that the hose is hard to handle and the intensity of stress on the hose is excessive.

In order to prevent the fires that are caused by falling trolley and other electric wires, Mr. Glover advised the use of electric switches at every section of the mine so that the current could be turned off when not needed in that particular section. He advocated the placing of a switch outside, one that could be locked. Then whenever the mine was idle, the current could be entirely shut off the mine except insofar as it was needed for supplying power to the pumps.

Patrolling the Mines To Forestall Fires

He said that at his mines fire patrolmen were sent into the mine at 4:30 p.m., each having an electric lamp and a safety lamp. It was their business to see that the mine was free from fires. Each patrolman had two fireboss' sections to patrol. Glover was questioned whether the fire patrolmen went in pairs or alone, one of the members of the Council believing that work of this kind was more safely performed when two men went together. If anything happened to one, he could be assisted by the other.

Mr. Glover said that the patrolmen at his mine did not go in pairs but alone. He advocated cutouts on all sections so that any area would be automatically cut out should a short circuit occur in that section. C. E. Pettibone, of Pickands Mather & Co., said that where sprinklers were provided the shutoff should be placed at least 150 ft. from the shaft so that in case of a fire it would be readily possible to turn the valve leading to the water system. It was natural to put it at the head of the shaft, but in case of a fire the smoke and flame might make approach to the valve impossible and so over balance the advantage of its convenient location.

Wallace McKeehan said that the Copper Queen Consolidated Mining Co. has four timbered shafts fitted with sprinkling systems, jets being placed every 25 ft. and in every compartment. He said that it might be thought that a sprinkler at the head of the shaft would be enough, but its action is uncertain. He said that there were doors on the shaft but that there were strict rules against closing them under any circumstances because men might be caught by a reversal of air.

The same rule held good with regard to sprinkling, for turning on the water might result in the reversal of the air current. Whether that would apply to coal mines where the currents are more rapid and certain is more open to question. Mr. McKeehan said further that the "firebugs" at the mines of the Copper Queen Consolidated Mining Co. traveled in pairs and started work at 9 a.m. George S. Rice said that where the air currents were somewhat weak, sprinkling might cause a reversal of the air and in case of a fire smother men who otherwise would manage to escape.

B. F. Tillson was desirous of knowing whether automatic sprinklers were in use in shafts and other parts of mine workings. He wondered whether they could not be installed there as satisfactorily as in offices and mine buildings, where they have proved successful in extinguishing incipient fires. Nobody knew of any such installations.

Difficulties Connected with Sprinkler Lines

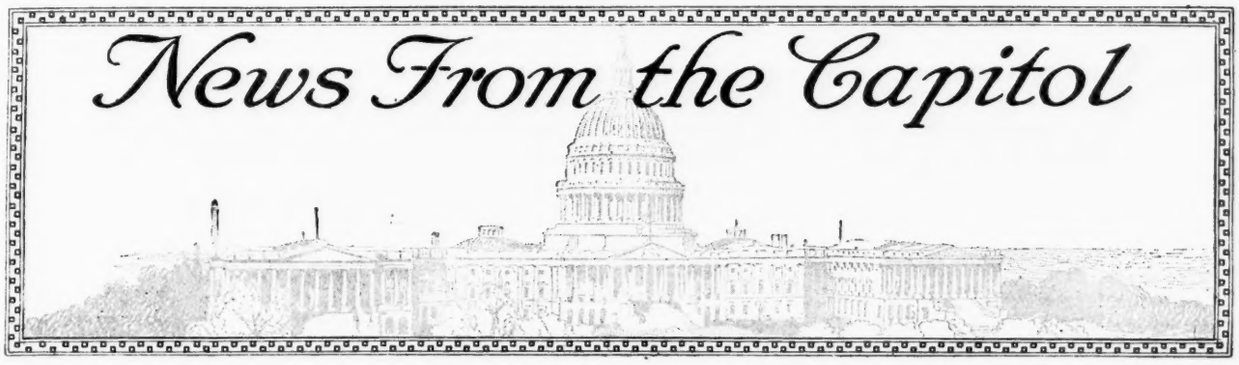
John Lloyd declared that the trouble with sprinkler systems around mines was that the water was apt to freeze. George S. Rice suggested that this difficulty might be met by keeping the lines air-filled till they were needed. It was stated, however, that for more reasons than one there was difficulty found around a shaft in keeping pipes, empty or full, in working condition. Not only did such pipes freeze, but the air in them and around them caused them to corrode.

C. E. Pettibone and H. G. Davis both declared that the air lines entering the mines often froze solid. Mr. Davis said that discharge of pumps is kept from freezing either by passing steam into the water or by binding steam pipes and water lines together. In a similar way the sprinkler pipes might be kept free of frost.

Mr. Davis also called attention to the menace connected with old and decayed timber which carries fire readily. He said that he had known fires which jumped 1500 ft., the sparks from burning material being carried that far by the current and finding lodgment in decayed timber which was in suitable condition to furnish them with a resting place and food for combustion.

For this reason Mr. Davis advocated the use of treated timber. Mr. Lloyd said that creosote-treated timber had been used at the mines of the Lehigh Valley Coal Co. for 22 years and there had never been a fire in it. He said that many fires had started where there was untreated timber.

(To be continued)



National Coal Association Gets Together with Garfield

After a conference with Fuel Administrator Garfield on Sept. 26, the directors of the National Coal Association began active work with the full approval of the fuel administration. The National Association will cooperate closely with Dr. Garfield and will assist in securing complete and correct costs of mining operations throughout the United States.

W. K. Field, of the Pittsburgh Coal Co., has been chosen as president of the National Coal Association; J. H. Wheelwright, of the Consolidation Coal Co., is vice president; J. D. A. Morrow, formerly assistant secretary of the Federal Trade Commission under E. H. Hurley, is secretary, and George Barker, of the Maynard Coal Co., of Columbus, is treasurer.

Mr. Morrow stated that every assurance had been given by Dr. Garfield that price adjustments would be made promptly wherever it was shown that the President's schedule was too low. Temporary offices have been opened by the National Coal Association in the Woodward Building.

New Price for Coke Is Announced

A pleasant surprise came to coke men with the announcement that $6 is the price approved by the President for coke at Connellsville. This is $2 higher than the price it had been feared would be named. Coal men are very generally of the opinion that this foreshadows an increase in coal prices, since the margin between the price fixed for coke and the present price of coal is so great that it probably will result in a great rush to build more beehive ovens. The statement fixing steel and coke prices, as given out officially, follows in full:

The President has approved an agreement between the War Industries Board and the steel men, fixing the following prices, which become effective immediately, and are subject to revision Jan. 1, 1918:

Commodity	Basis	Price Agreed Upon	Recent Price	Reduction Amount	Reduction Per Cent.
Iron ore	Lower Lake ports	$5.05*	$5.05*		
Coke	Connellsville	6.00†	16.00†	$10.00	62.50
Pig iron		33.00*	58.00*	25.00	43.10
Steel bars	Pittsburgh / Chicago	2.90‡	5.50‡	2.60	47.30
Shapes	Pittsburgh / Chicago	3.00‡	6.00‡	3.00	50.00
Plates	Pittsburgh / Chicago	3.25‡	11.00‡	7.75	70.50

* Gross ton. † Net ton. ‡ Hundredweight.

It was stipulated, first, that there should be no reduction in the present rate of wages; second, that the prices above named should be made to the public and to the Allies, as well as to the Government; and third, that the steel men pledge themselves to exert every effort necessary to keep up the production to the maximum of the past, so long as the war lasts.

Measures will be taken by the War Industries Board for placing orders and supervising the output of the steel mills in such manner as to facilitate and expedite the requirements of the Government and its Allies for war purposes, and to supply the needs of the public according to their public importance and in the best interest of all, as far as practicable.

A spirit of coöperation was manifested by the steel men, and no doubt is entertained that every effort will be made to bring the production as nearly as possible up to the extraordinary demands resulting from the war.

Miners Ask Increase in Wages

Representatives of operators and miners in Pennsylvania, Ohio, Indiana and Illinois met in Washington Sept. 25 and began negotiations looking to the revision of the wage scale. While formal announcement has not been made of the demands of the miners at this writing, it is understood that they will request the following: An increase of $1.90 for day men, both inside and out; an increase of 10c. a ton for pick and machine mining; an increase of 20c. a ton to apply to thin vein operations; an increase of 20 per cent. for yardage and dead work.

John P. White was selected to preside over the meetings, which are exepcted to continue for a week. Horace Robins, of Cleveland, was selected as chairman of the operators' caucus. The first day's deliberations were confined largley to the addresses of Dr. H. A. Garfield, the fuel administrator, John P. White, the president of the United Mine Workers of America, and of William Green, secretary of the same organization.

Some Official Rulings of the Fuel Administration

Official rulings have begun to come down from the Fuel Administration. These will be followed by others, it is understood, as the many pending questions are decided. No rulings have been made on profits or prices of retailers. Until such orders are issued, Dr. Garfield states, retail dealers are at liberty to sell coal at the market price. Dr. Garfield also announced that coal may be bought and sold at prices lower than those prescribed by the President until otherwise ordered. The rulings which have been handed down are as follows:

Operators who maintain their own sales department, whether in their own name or under a separate name, and dispose of coal directly to the dealer or consumer, are not to be regarded as "jobbers," and may not charge the jobber's commission specified in the President's proclamation

of Aug. 23. A jobber must be entirely independent of the operator, in fact as well as in name, in order to be entitled to charge a jobber's commission.

Free coal shipped from the mines subsequent to the promulgation of the President's order shall reach the dealer at the price fixed in the President's order, plus only a proper jobber's commission (if coal has been purchased through a jobber) and transportation charges; provided, however, that in no case shall the jobber's commission exceed 15c. per ton of 2000 pounds.

Coal from wagon mines, or coal delivered from mines direct to the consumer by wagon or truck may be sold at the President's price plus a sum representing the cost of hauling.

Coal bought by a railroad for its own use as fuel from a wagon mine may be sold at the President's price plus a sum representing the cost of hauling.

If the claim is made that any specific coal has been acquired by the dealer in accordance with a bona fide contract, enforceable at law, existing prior to the date of the order of the President applicable thereto, the burden of proof is upon the dealer and other parties to the contract to establish these facts.

The effect of the President's proclamation upon coal rolling when the proclamation was issued is to be decided by first ascertaining whether or not the title had passed from the operator to the consignee at the time the President's proclamation became effective.

Must Furnish Complete Data on Canadian Shipments

With regard to the Canadian exportations, this information was vouched at the Fuel Administration: "Tentative plans have been formulated after consultations with representatives of the Canadian Government by which it is expected to maintain a flow of coal to Canada in amounts sufficient for Canadian needs and without interruption in the operation of Canadian plants, while at the same time guarding against a coal famine in either our own northwestern states or in the states of New England.

"On the basis of the information called for, and in coöperation with the Priority Board, the Interstate Commerce Commission, and the Shipping Board, it is hoped that the supply of coal available for the Northwest, Canada and New England may be so conserved and shipments so made as to meet not only the normal demands of all these sections, but the extra industrial demands occasioned by the war."

Some complaint is reflected here by those interested in Canadian business at the short time allowed for complying, within the time specified, with the exacting conditions for the conduct of this business. Many operators are at a loss to understand why the information demanded must be made up in two ways to meet what appears to be a duplication of requests from the Fuel Administration. This may be answered in part by the fact that one of the returns will be handled by the Federal Trade Commission and the other by the Bureau of Mines.

The letters calling for detailed knowledge as to Canadian shipments did not reach most operators until Sept. 22. Sept. 23 was Sunday, thereby making it very difficult to furnish the data requested prior to Sept. 26. The demand for this information is of interest generally from the fact that it indicates the policy likely to be followed in further requests for information. The letter, which bears the signature of Dr. Garfield, is as follows:

Every coal operator, producer, jobber, dock company and other person (hereinafter called the exporter) who has at any time during the 12 months ending Aug. 31, 1917, engaged in or expects or wishes during the 12 months beginning Sept. 1, 1917, to engage in, the sale, for use in Canada, of either kind (anthracite or bituminous) of coal produced in the United States, or in the shipment of any such coal from any point in the United States to any point in Canada, is hereby required to notify the Fuel Administrator by letter (or in the special circumstances, hereinafter stated, by telegram) of such intention or wish to engage in such sale or shipment. Such letter must set forth the following information and data:

1. The amount in tons (2000 lb. for bituminous and 2240 lb. for anthracite coal) which the exporter desires to ship by any method or route from this country to Canada during the remainder (after the date of his letter) of the 12 months beginning Sept. 1, 1917, and the amount already shipped between Sept. 1 and the date of such letter.

2. The amount of such shipments which the exporter expects or wishes to make during each of the 12 calendar months beginning Sept. 1, 1917.

3. The route or routes, and whether rail, lake or a combination or the two, by which he expects or desires to make his shipments of coal, and the amount of each kind of coal by each route.

4. The general division, district or province of Canada to which such shipments are desired to be made, and if more than one, the approximate amount desired to be made of each kind of coal to each such division, district or province.

5. The amount of tonnage of each kind of coal for which the exporter has orders on hand at this date for shipment to Canada, and the amount of such orders on hand at the date of his letter of notification to the Fuel Administrator.

6. The amount in tons (2000 lb. for bituminous and 2240 lb. for anthracite coal) which the exporter shipped from this country to Canada in each calendar month of the 12 months ending Aug. 31, 1917.

7. The route or routes, and whether rail, lake or a combination of the two, by which he shipped such coal during each of said 12 calendar months, and the amount of each kind of coal by each route.

8. The general division, district or province of Canada to which such shipments were made during the 12 months ending Aug. 31, 1917, and if more than one, the approximate amount of each kind of coal shipped to each such division, district or province.

9. The name of each consignee, the location to which each consignment was made and the total amount of each kind of coal shipped to each consignee by the exporter from this country to Canada during the 12 months ending Aug. 31, 1917.

The letter of notification required by the terms of this notice from each exporter must reach the office of the undersigned on or before Sept. 25, 1917. If for any reason the exporter fears his letter may not reach the undersigned before Sept. 25, he may communicate by telegraph to the undersigned, stating his desire to engage in the business of shipping coal to Canada during the 12 months beginning Sept. 1, 1917, and including in his telegram the information called for in questions (1) and (6) above. Any such telegram should be confirmed by a letter from the exporter containing all the information called for by this notice.

All communications to the undersigned under the terms of this notice should be signed either personally by principals or by a duly authorized agent, and those signed by an agent should be accompanied with evidence of his authority.

Except for good cause shown upon written application to the Fuel Administrator, no operator, purchaser, jobber, dock company or other person, from whom a notification by letter or telegram has not been received on or before Sept. 25, 1917, will be permitted to engage in the business of the sale, for use in Canada, or in the shipment of any such coal from any point in the United States to any point in Canada, unless hereafter specifically licensed so to do by the Exports Administrative Board upon application filed with said board and approved by the Fuel Administrator.

Exporters who comply with the terms of this notice will be advised at an early date of the regulations under which shipments of coal are thereafter to be made by them from the United States to Canada. Until such regulations are established, shipments to Canada by exporters who have complied with the terms of this notice may be continued as heretofore.

The design for the coal-cleaning plants to be used by the Government in Alaska has been completed by George Watkin Evans, of the Bureau of Mines' staff.

The Labor Situation

General Labor Review

It is hard to feel any interest in any other and lesser labor matter till the Central Competitive Conference has concluded its session. That conference will be followed, of course, by another series of meetings in which the Anthracite, the central Pennsylvania, the Southwest, the Oklahoma, the northern Wyoming and southern Wyoming, the Montana and the Oregon districts will settle their difficulties. There will also be settlements in the districts composing the Central Competitive District and then settlements in the subdistricts, and so on almost *ad infinitum*.

Let us hope the first agreement will be so simple that the subsidiary agreements will be less exciting than usual. It will be hard, however, to induce the central Pennsylvania mine workers to confine their attentions to the wage scale. Their minds are set on changing working conditions also. And in the anthracite region the war is going to be regarded as a reason for establishing the closed shop. The mine workers propose to use the war as an excuse for all kinds of demands. In the Panther Creek Valley, the Lehigh Coal and Navigation Co., an anthracite concern, is importing negroes from the New York subways for the operation of its collieries. There are but few negroes among the mine workers of the anthracite region. The stationary firemen of the collieries in and around Scranton are demanding shorter hours and a 15 per cent. increase in wages and have gone on strike to enforce it. The strike is similar to those started first in District No. 9 and then in District No. 7. In each case it was defeated by the union as it was in violation of the contract. Now it has broken out in District No. 1, and Tom Dempsey, the president, has declared it a violation of the contract and a breach of union rules. The places of the striking men will doubtless be promptly filled. A few men like the firemen cannot succeed in breaking their contract. It takes a more numerous body of men to do that.

The button strike at the Beaver Brook and Honey Brook mines, near Hazleton, Penn., ended Sept. 22. For three days over 1500 men and boys were idle. All those who had delayed payment of union dues were brought to time.

In central and western Pennsylvania, West Virginia and Ohio the mines are working as steadily as a deficient car supply will allow. In Kentucky and Tennessee conditions are still unchanged; the strike is said to be near an end, but no one can size up the situation satisfactorily. In Michigan the mine workers want the mines controlled by the Government. In Montana a mine where the mine workers were disciplined for striking without waiting for permission has returned to work, the new local being constituted of more amenable men and given a new charter. In the Fernie district of British Columbia a strike against paying poll tax temporarily closed the mines.

Under no circumstances must we allow the production of coal to stop. It is our business as American citizens to produce that coal just as certainly as it is the business of other American citizens who are in the ranks of the army to march on over all obstacles. I am told that under ordinary circumstances this would not be the time when you would meet together to consider a readjustment of the wage scale. But a new factor has been injected into the situation. Americans under present circumstances, perhaps above the people of any other country, stand firmly upon their agreements. But as men who appreciate all the angles of a situation they regard it as reasonable to meet to review the factors which have entered into the situation, and, to quote the words of the law, to go to the root of the contract and consider those things which would have been considered had both parties known the situation as it exists today.—Coal Administrator H. A. Garfield, at the conference of operators and mine workers of Central Competitive District.

Wage Conference at Washington

On going to press, the main interest centers around the wage conference at Washington, where the mine workers are seeking peacefully, though persistently, to set aside a contract already once modified. The mine workers ask: (1) An increase of 15c. a ton on pick and machine mining at all basing points throughout the United States; (2) the percentage of increase granted in machine mining to be applied to all differentials between thick and thin veins; (3) an increase of $1.90 per day for all daymen; (4) an advance of 20 per cent. in all deadwork and yardage.

The meeting was originally called at Indianapolis, Sept. 6, but was adjourned at the request of Coal Administrator H. A. Garfield, who desired to discuss the issues with the contending parties. He was not able, apparently, to make the conference unnecessary, and when it became inevitable, he arranged that it be held at Washington under his supervision and within reach of his counsel. The conference commenced on Sept. 25. Mr. Garfield had the first word. He urged the importance of the production of coal in words which we here quote in an inset. He then declares, in words also so quoted, that new conditions may require a remedial action modifying the terms of contract. In his brief statement he was most diplomatically cautious. He did not admit that there were any new conditions requiring a change in wage. He said: "Unless you can agree that the factor that has entered in is of such a nature that it ought to produce some modification or change, then no modification or change will be made; but if you decide that some modification or change ought to be made, then I take it that you will provide for it."

The speeches of John P. White and William Green both laid more stress on the need for keeping the mine workers in the industry than on the increased cost of living. They also pointed out how hard it was to keep the men in leash with higher wages so general. The mine workers seek to be among those who have found the war profitable.

White and Green did not say that the mine workers were anxious to make a better living during the war than they made before it. They did not declare that they were seeking to profiteer. But as an actual matter of fact this is what the greater part or all this demand on the part of the mine workers actually amounts to. The temptation is natural enough; no man with normal impulses but has had the same desire at one time or another. The question is, Shall it be allowed? If it is, surely these war wages should not be freed from the exactions of the tax collector any more than the war profits are to be.

Mr. White said: "We feel as representatives of the miners that there is only one way in which to solve this situation adequately, and that is by the coal operators agreeing to

modify the present wage scale to such an extent that the miners will have a greater earning power than they have at this present time.

"Every other industry is competing for labor. The Government itself is offering better wages than the coal-mining industry affords. The selective draft is taking from the mines the flower of the young manhood among the miners. Industrial disturbances of great magnitude have taken place in the mining districts, and it is idle to believe that we can temporize with this situation much longer.

"We, as officers of the miners' organization, have endeavored to control the situation and keep it within the bounds of the usual rules and regulations that govern us in our relation with the employers, but conditions over which we have no control render that well-nigh impossible."

Mine Workers Seek To Profit from the War

The reader will note that while these are all arguments which tend to show that a higher wage would be best for the industry and for production, they do not show that the miner needs more wages to keep up his former manner of life. Surely the selective draft does not compel the mine worker to complain about his lot or justify him in asking for more wages.

The attitude of the operators is to some extent conflicting. Some of those who come from districts where Government quartermasters and munitions plants' labor agents have been distressingly active in weaning away men, rather favor a new wage scale. It is felt by others who are not operators of unionized mines that a raise in union wages accompanied by an increase in prices would make it possible for the small miners which have been paying all kinds of wages to go on working at the high scales they have long ago established. The closing of these small mines resulted not so much in increasing the force at the large union mines as in adding to the labor force at the big steel mills. The men when rendered idle by the closing of their mines left the occupation of mining to engage in other industries.

Morrow Denies Miners Are Leaving for Mills

However, J. D. A. Morrow, secretary of the National Association of Coal Operators, takes up the cudgels strongly for the scale signed in the spring of this year. He says that it is not true that thousands of miners are being lured from the mines by higher wages. He declares that an increase of 15c. a ton means an advance of 25 per cent. to miners who under a supplemental agreement last April received an advance of approximately 20 per cent.

As for the increase of $1.90 a day for all day laborers, he declares, according to the papers, that it represents an average increase of from 60 to 70 per cent. for this unskilled labor, placing the price of a day's work at from $4.25 to $5.50, instead of $2.35 to $3.60 per day as it now is. The increase on the lower wage, which few get, is, however, just about 80 per cent., while for the higher wage which is more general the increase is roughly 52¾ per cent.

A Roster of the Men in the Confabulation

Of course, in this preliminary conference only the Central Competitive District is represented. The western Pennsylvania operators are W. K. Field, John Donaldson, William Henderson, Samuel Taylor, Joseph Patterson, James Armstrong, Tracy Guthrie and J. H. Sanford. Ohio sent S. H. Robbins, C. E. Maurer, Michael Gallagher, Joseph Pursglove, G. C. Weitzel, George F. Everbaugh, W. H. Haskins and A. R. Hamilton. Illinois was represented by E. T. Bent, W. J. Spencer, W. B. Jess, C. M. Moderwell, Rice Miller, T. T. Brewster, W. J. Jenkins and H. C. Adams, while Indiana's interests were intrusted to W. J. Freeman, J. C. Kolsem, Hugh Shirkie, H. G. Richards, A. M. Ogle, E. D. Logsden, M. L. Gould and P. H. Penna.

The western Pennsylvania mine worker representatives were Philip Murray, Robert G. Gibbons, William Hargest, James Hood, Thomas Hughes, Fred Gullick, William Hynes and Sidney Davis. The roster from Ohio consisted of John Moore, Lee Hall, Sanford Snyder, Thomas Price, John Saxton, William Roy and W. C. Thompson. From Illinois came Frank Farrington, Walter Nesbit, Harry Fishwick, Pio Franckey, Edward Dobbins, Ben Williams, Mose Johnson and G. F. Mercer. Indiana sent Edward Stewart, James Sheil, William Mitch, Jack Grange, Archie Forbes, William Raney and James McKinney.

Later reports declare that the operators on Sept. 26 refused to grant the increased wage requested, stating that it could not be paid so long as the present schedule of prices set by the Government remained in force. They also informed the Coal Administrator that these wages would completely close a large proportion of the mines if the operators are compelled to concede them.

As is usual, the opposing parties have formed a joint committee of more manageable size to discuss their differences. These are as follows: Operators—C. M. Moderwell and T. T. Brewster, Illinois; C. E. Maurer and J. C. Weitzel, Ohio; William Henderson and J. A. Donaldson, western Pennsylvania; P. H. Hanna and W. J. Freeman, Indiana.

Miners—Edward Stewart and William Welch, Indiana; John Moore and J. W. Savage, Ohio; Philip Murray and Robert Gibbons, western Pennsylvania; Harry Fishwick and Frank Farrington, Illinois.

The ex-officio members are: John P. White, president, United Mine Workers; William Green, secretary; Frank J. Hayes, vice president; Robert L. Lewis, statistician.

Pennsy Soft Coal Mines Run Steadily

Labor conditions in central and western Pennsylvania remain unchanged. The war draft is, however, depleting the mine forces. Along the Salisbury branch of the Baltimore & Ohio R.R. there has been a protracted strike for the recognition of the union. It is hoped that this will soon be at an end. A few miners have returned to work at the mines of the Grassy Run Coal Co. and the number increases daily. The men at the Smokeless Coal Co.'s operation at Hooversville went on strike recently, but after four days resumed operations. The car supply on the Baltimore & Ohio R.R., in the Somerset County field, has been deplorable—barely 30 per cent. during the week ending Sept. 22.

Surely These Men are Not Poor

The 4300 miners of Springfield, Ill., who were on strike a week for "their constitutional rights of public assemblage and free speech," have returned to work after being permitted to parade on Sunday afternoon and listen to speeches denouncing the officials who prevented them from parading the Sunday before, when there was danger of disorder. It cost them $18,000 a day while they were out. The coal supply was diminished 25,000 tons a day. All this was in violation of the miners' contract with the operators and without the authorization of the mine workers' officials.

The strike grew out of the street-car men's strike in Springfield and extended to other industries, affecting in all 8000 men. It was called by a "general strike committee," which, after the parade and speeches on Sunday, adopted a resolution authorizing itself to continue its work and issue a call to workers to assert themselves whenever their constitutional rights are being denied or set aside.

Frank Farrington, state president for Illinois of the United Mine Workers of America, issued a statement rebuking the miners for striking in violation of their agreement and denouncing the "strike committee" which usurped the authority of the United Mine Workers' officials. It is addressed to the Springfield miners' locals and the strike committee. He declares that the course followed in the strike and threatened to be followed under the authorization given the committee to continue its work threatens to destroy the miners' union in that state.

He reminds the miners that while they were striking for their "constitutional" rights they were violating their own constitution, which vests the executive board of the union with the exclusive right to order strikes. Continuing, he says: "Any strike that may take place by reason of the direction of this strike committee will be in violation of the laws of the United Mine Workers of America, and those

responsible for exercising usurped authority and any members of the miners' union responding to their direction will be subject to the punishment prescribed in the laws of our organization."

In concluding his statement, which he says is written by direction of the district executive board, he says: "We cannot allow 4000 or 5000 miners in Springfield to disregard the laws and rules laid down for the government of the 80,000 members of the Illinois miners' union, and we shall combat with all the powers of our organization any attempt on the part of the so-called local strike committee to again influence a strike of miners in Springfield and vicinity. So far as the miner members of this strike committee are concerned, they are acting without constitutional authority; their conduct is presumptuous, and they are attempting to usurp authority that, if allowed, would destroy every fundamental of the United Mine Workers of America."

Farrington declared his belief that the miners, by the unauthorized strike, had seriously hampered if not altogether defeated efforts of their officials to secure for them an increase of wages. He was pleading the high cost of living and the increasing difficulty of the miners meeting their living expenses, before Coal Administrator Garfield in Washington, when information of the strike was received and Garfield came back at him with a demand to know how they could afford to lay off for a week if they could not meet their living expenses.

Four hundred men were out of work most of last week because the drivers in the Shiloh mine of the Southern Coal, Coke and Mining Co., near Belleville, Ill., struck for an advance. They returned to work the latter part of the week under the old conditions, not having gained anything. The drivers at other mines have made the same demand and in a number of instances have tried unsuccessfully to enforce it by striking, but in every instance they have been compelled by the state union officials to return to work.

Three hundred miners struck at Carlinville, Ill., a few days ago, claiming that the powder furnished them was of inferior quality and that they were consequently unable to produce a maximum quantity of coal. The indications were that the operators will furnish a higher grade of powder to appease the workers.

Big Strike Said To Near Settlement

An optimistic prediction that a settlement of the strike in the southwestern Kentucky-Tennessee field might not be far off was made to the representative of *Coal Age* by B. W. Whitfield, of Harlan, just from the heart of the strike zone. Mr. Whitfield stated that a large proportion of the miners were ready and willing to return to work, and that the indications were the strike would be over when enough more came around to that view to overcome the influence of outside agitators, who are even now losing their hold on the men. Some of the operators have lately been pessimistic and have declared that the strike is likely to last a long time. Union officials are said to have declared that every union miner in the country would be assessed to help the Kentucky-Tennessee miners in their fight. If this is true, the operators certainly face a long strike.

A series of meetings of the strikers have recently been held at the centers in the field. It is said that they have been well attended by mine workers, who became quite demonstrative when the union heads made promises that the international organization would back the strikers to the end. However, it is readily apparent that the strike is losing much of its early vigor and discussions of forcible intervention on the part of the Government to draft the strikers as mine workers are not adding to their ardor. In some cases operators are evicting the striking miners from their homes. At Middlesboro the operators have taken action and have been equally successful in securing their eviction orders when the trials were before juries and when they were decided by the court. Once there is a definite and final ruling in the Fuel Administrator's bureau as to the price scale, it is insisted by observers, a settlement of the strike will be speedy.

In Kentucky and Tennessee you can get any assurance you please as to the way the strike is going. Both sides expect to win shortly "hands down." A telegram from Coal Administrator Garfield to the people of central Kentucky, who declared a coal famine was imminent, read as follows: "Suppliers of the Lexington Utilities Co. and Kentucky Traction and Terminal Co. are directed to arrange delivery of sufficient coal to keep plants in operation. Understand shortage due strikes certain Tennessee and Kentucky mines, which will receive immediate attention and action."

The Kentucky people believe this foreshadows Government control for the mines, which employ about 1700 men. In western Kentucky the miners are still being organized. About 200 of the 300 mine workers at the Fern Hill, Lee Rudy, John Rudy, W. T. Patrick, Malinger, Hoback, Overstreet and other small mines in Daviess County have organized local unions as part of District No. 23. The others are expected to join. Progress in organizing the men at the mines of the larger companies to the west and southwest of Daviess County is not so evident.

Southwest Stirs But Does Not Strike

The mine workers in the Southwest are working fairly well, but the situation is somewhat uncertain. It is feared that at any moment the coal miners may join with the other unionized men to settle the troubles that Kansas City is having with its policemen, its street-car men, its packing employees and its freight handlers. The trouble with the policemen leads all others.

John R. Ransom, police commissioner, discharged some policemen for not riding in cars to protect strike breakers in the street-car employees' strike. Governor Gardner demanded his resignation, and the unions have insisted that the policemen be reinstated. There are 43 of them, including two sergeants, and in their behalf a general strike involving the coal-mine workers is threatened.

The coal operators are pleased, however, to note that they have the assistance of the United Mine Workers in crushing what is known as the Working Class Union. This organization is frankly for direct action, the class war and, what is as bad, is anticonscriptionist. It appears to be the I. W. W. of the Southwest.

Osage County is still idle, the miners insisting on a 50c. advance. But in considering this strike its unimportance must be borne in mind. Whatever Osage County might do under favorable circumstances it is certain that in 1915 it only mined 100,000 tons, whereas Kansas as a whole, only the eleventh state in the union as far as output is concerned, mined in that year nearly 7,000,000 tons. Even the nonunion mines in Osage County that are operated by cooperative companies and labor exchanges are shut down because with the 50c. advance the Government price does not provide an operating profit.

In Arkansas, Deming No. 2 has been closed since Aug. 27, 100 mine workers being idle. The men quit, without any of the preliminaries for which the contract insistently calls, alleging that the rule requiring precedence in employment in those applying for work was not being observed. The international board has sent a board member to solve the difficulty, and he is trying to get the men back to work, after which the arbitration provision of the contract can be put in operation.

In Michigan the mine workers are trying to secure a wage increase. It is understood that the Bay City delegates to the convention favored the taking over of the mines by the state, and a petition to Governor Sleeper asking for such action, with a further appeal in view to the Federal Government if state action should be found unconstitutional. The mine workers also seek a minimum wage of $5 per day. This is really less than is now being asked in the Central Competitive Field. There $5.50 a day is practically the minimum wage sought by the union leaders. It seems remarkable that the Michigan mine workers favor Government control. In general they are even more strongly opposed to the Federalization of the industry than are the operators.

Editorials

NO ONE has yet defined the word "profiteer," and so its meaning is open to doubt; but it is safe, perhaps, to define it as "One who makes a bigger profit during the war than he would make in peace." Secretary of Labor Wilson, in his address to the Chamber of Commerce of the United States, said: "Employers and employees should both be willing to yield something for industrial peace, should both be willing to make sacrifices to keep our industries running smoothly. I have said to employees that this is no time to insist on recognition of the union, no time to insist on the changes of standards in work. I have told them that if they have been unable to gain recognition of unions in normal times, they should not endanger their country's future by insisting on it in these abnormal times."

* * *

This is an admirable principle. Secretary Wilson, however, goes on to apply it to profiteering in the following words, which have an extremely fair ring but which are for that reason the more subject to objection: "But I also want to say to you employers that this is no time to stand upon your prejudices, no time to insist on profiteering. If you have been unable to gain big profits in normal times, you should not take advantage of your country's necessities by insisting on abnormal profits in these times."

* * *

THE comparison between taking profits and striking for benefits is not happy, because high prices in most industries are the result not of combinations, nor of restrictions of output, but arise solely from the condition of the market. To strike for union conditions is to endeavor to compel a new condition at the extreme peril of the country. On the other hand, the high prices of coal and other products were merely accepted by the producer, not imposed on the public. If it is profiteering for the coal operator to accept pay for his coal at the market price, it is also profiteering for the workingman to accept increased pay such as was given last week by the United States Steel Corporation. There is no difference in principle.

* * *

However, the main weakness in the comparison arises from the fact that profits are not like strikes a hindrance, but are a help to the war. Let us take an analogy: A flower springs up, reaches its full grandeur, fades and dies down. There is no outcome from its brief and purposeless life, unless a bee comes around looking for honey. The bee visits several thousands of flowers, taking a little honey from each one. It carries it to its hive, and when the comb is full the bee-keeper takes out most of the comb leaving just a little to keep the bee in good heart and to feed him during the winter season.

THE average workman is like the flower. He makes the honey of profit, it is true, but when all is done the profit is all gone. The capitalist is like the bee. He gathers the honey of profit and stores it in the hive. The bee-keeper of our parable is the Government, and during the war it should take most of the comb, leaving just enough for the stimulation of the bee. Perhaps some day we will come across some Burbanked flowers which will extract their own honey and deliver it to some central station. Some day we will have workingmen who will save their mite and bank it or invest it. There are a few of them who do so already, but not so many that we can rely on them to supply the sinews of war.

* * *

The capitalist who collects the profits of labor is badly needed. He who collects much does well, and he who collects more does better. The bee-keeper should regard the latter as of a better strain. But from all who gather honey a like toll should be taken. The attitude that a past profit is a perquisite that a man has a right to go on collecting during the war is fatally wrong. No one should get rich or live better during this struggle for liberty. To do so is profiteering. He should rather get poorer or live worse. But profits should be large so that the Government can obtain large sums of money from heavy taxes.

* * *

IT IS to be feared that some rich men are hoping to increase their possessions during the war. Let a generously planned taxation wholly relieve them from such an improper idea. There are workingmen who believe that the war is a time for new extravagances. Let high prices cause that ignoble dream to fade. There are lots of poor men nowadays, judging by all reports—men who have bought automobiles and will be impoverished till they have finished paying for them. They can barely buy the gasoline to run them, especially if they take time off to make pleasure trips. One realizes that these men must have an increase in income at once, that prices must be kept down so that they can pay their bills and run their flivvers. The cry in the Dakotas is quite sore. High prices have given the farmers ambitions, and they must have a high price for wheat to help them maintain their new ideals of satisfactory existence.

* * *

The miners in some places are in much the same predicament. However, let us pay no attention to their clamor; let us not restrict our resources by regulating prices, but let us rather tax the profits away almost as fast as they are made, remembering only that it is well to leave a little honey in the hive, as a stimulant and as a food. Industry requires even more. It needs something also for expansion.

Of What Value Is the Miner's Garden?

THERE is little question but our efforts to plant gardens and increase the output of comestibles has had a beneficial effect. At the same time it is well to examine just how a miner might plant a good garden and not benefit anyone appreciably.

Let us suppose that a miner plants his patch and tills it when he would not otherwise be working. It is a successful little plot, and from it he obtains good and varied food that saves him from purchasing much food.

But having reduced his food bills, he is able to spend more on articles of luxury. He thereby uses more manufactured goods than he did before. The industries he thus stimulates compete with the farmer and truck grower for labor, and the last condition is no better than the first.

In fact, the call to produce more may have an unfortunate effect. Large outputs have little value in themselves, as the operator knows well. The only value of a large production is that where there is more produced more can be saved. If consumption rises with production, the whole effect of speeded industry is lost. Of all the many and varied cries the war has developed there is none so important as the one word, "Save"; nor is there any that is harder to put into practice.

What Is the Answer?

COAL AGE is in daily receipt of letters, telegrams and telephone calls imploring us to tell the writers or speakers where and how they may buy—often regardless of price, kind or variety—enough fuel to keep their plants running. On the other hand, we are also often in receipt of letters from coal producers asking how they may dispose of a certain portion of their output in full compliance with the law, and yet at such a price as not to incur a financial loss. The following is quoted from a letter received from West Virginia:

> Some time back we contracted with a number of team track coal loaders to take their output at specified prices. Since then the price has been set at a lower figure. . . . We have thus a number of cars per week to handle which we cannot now sell except at a loss. . . . What we would like to do is to get in touch with a number of consumers who are financially reliable and in need of coal, who would be glad to accept shipments from us at a price that would not net us a loss nor get us into trouble. Can you give us the names of several such consumers?

Here is a case which is characteristic of the entire country. On one side is the producer, desirous of keeping both the letter and the spirit of the law, anxious to dispose of his output, yet naturally disliking the idea of selling his output at a financial disadvantage. On the other side is the consumer whose business is earning a profit, who is short of fuel with which to carry on his business, and who consequently is willing to pay any price for coal that is within reason—a price that would at least be equal to and probably far in excess of the figure that would permit the producer to escape loss. Between these two elements that are not only willing but anxious to transact business on a basis that would be mutually satisfactory and advantageous stand the agents of the Government, who vehemently preach the doctrine that "under no circumstances must the production of coal be stopped."

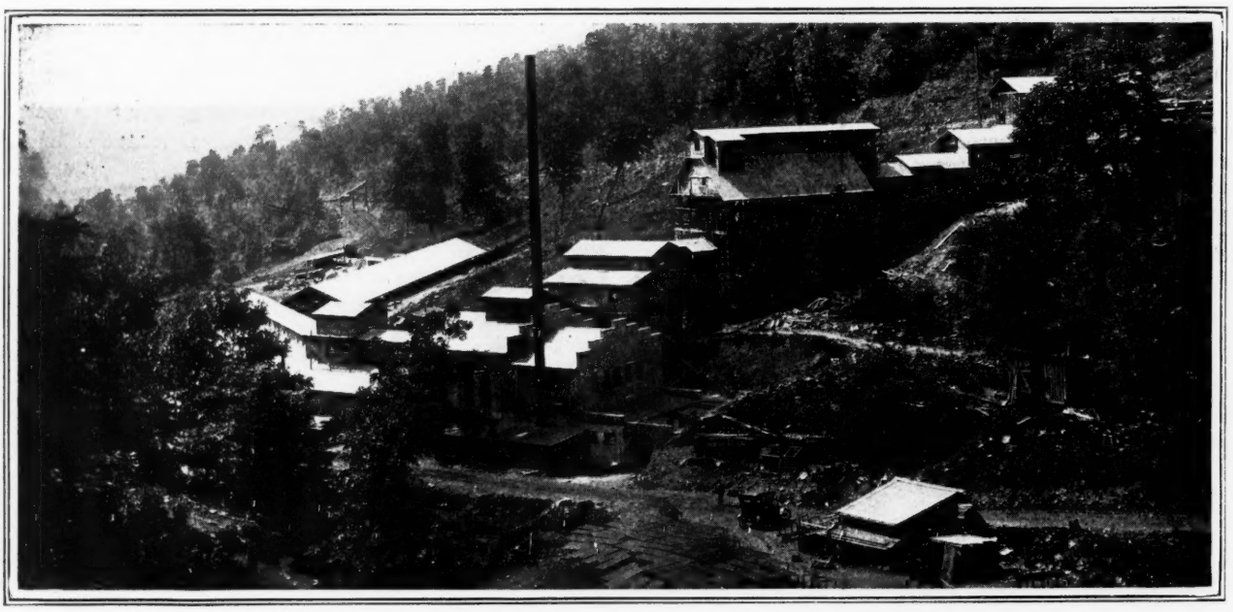
Is it the intention of the Government to utterly destroy the small operations of the land, the aggregate output of which, although possibly small, nevertheless means all the difference between having enough fuel for American life and industry and not enough? Do the Washington officials rely upon the ardent patriotism of the coal producers to impel them to mine coal and sell it regularly at a loss? Is it the intention of Uncle Sam to deliberately throttle and strangle the fuel industry, or is it the spirit of price fixation to lop off excrescences and prune down the "sucker shoots" represented by ridiculously abnormal prices, but leave the legitimate growth free to expand and develop and bring forth healthy fruit in the form of a substantial and vitally essential coal production?

If the spirit of price fixation has been befogged by the letter thereof, if the fundamental idea has been obscured by the legal wording, the time is ripe for an unshrouding. The goddess of justice should be unveiled.

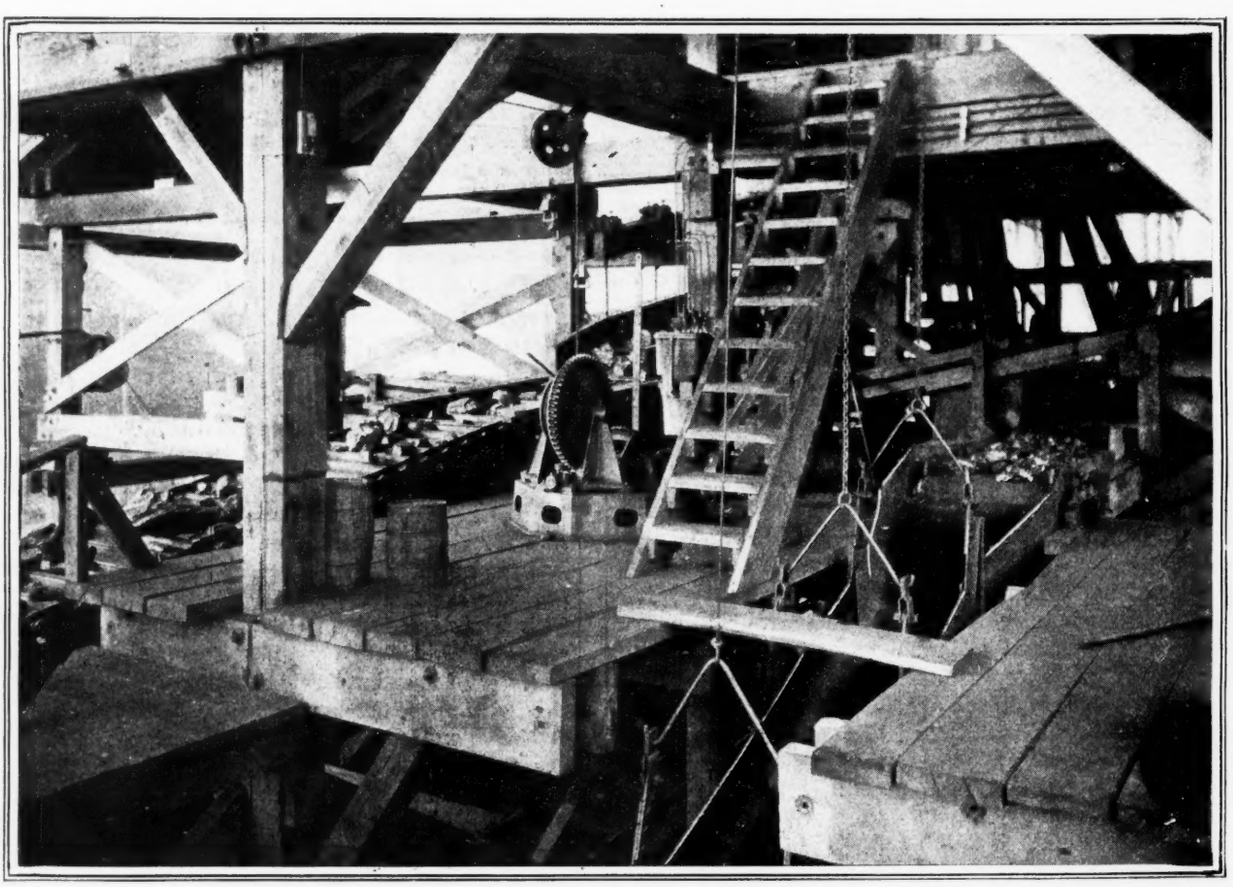
At a conference between the operators and miners' representatives held in Washington on Tuesday, Dr. Garfield made a few remarks, the essence of which was that both sides get together and arrive at a conclusion that would permit of the uninterrupted production of coal. The speech carried with it no threat, implied or otherwise, but from a United States senator comes the information that unless the coal operators and miners adjust their differences within a few days the Government will take over and operate the mines. Whether this proposed step, if taken, would result in a solution of the coal problem is open to conjecture, but that the situation is too serious to admit of delay is granted. A revision of coal prices upward, and a granting of higher wages to the miners would go far toward settling the matter. If this relief cannot be rendered mine owners, then the Government is welcome to the job of conducting a losing business.

SAFETY *is a prime consideration in mining. Low costs are no credit to a coal operator or any company official if they have been attained at a sacrifice of human life and limb. It is for this reason that the Oct. 13 issue of Coal Age, devoted to "Safety, First Aid and Welfare" work, will be of intense interest to every man who is connected in any way with the production of coal. In these days of labor shortage, those companies having a reputation for taking care of their men are likely to feel the pinch in the labor market far less than the concerns that think only of dollars and tons. This is the last call for your contribution to the safety special. Get your article to us immediately, and don't fail to send something in even though it is but a brief description of some small device or simple method you are using effectively. How many of your old friends know where you are or what you are doing? Use this opportunity to reintroduce yourself to the industry. Every lick counts to day. Every idea helps the game along. Don't wait until tomorrow; write tonight.*

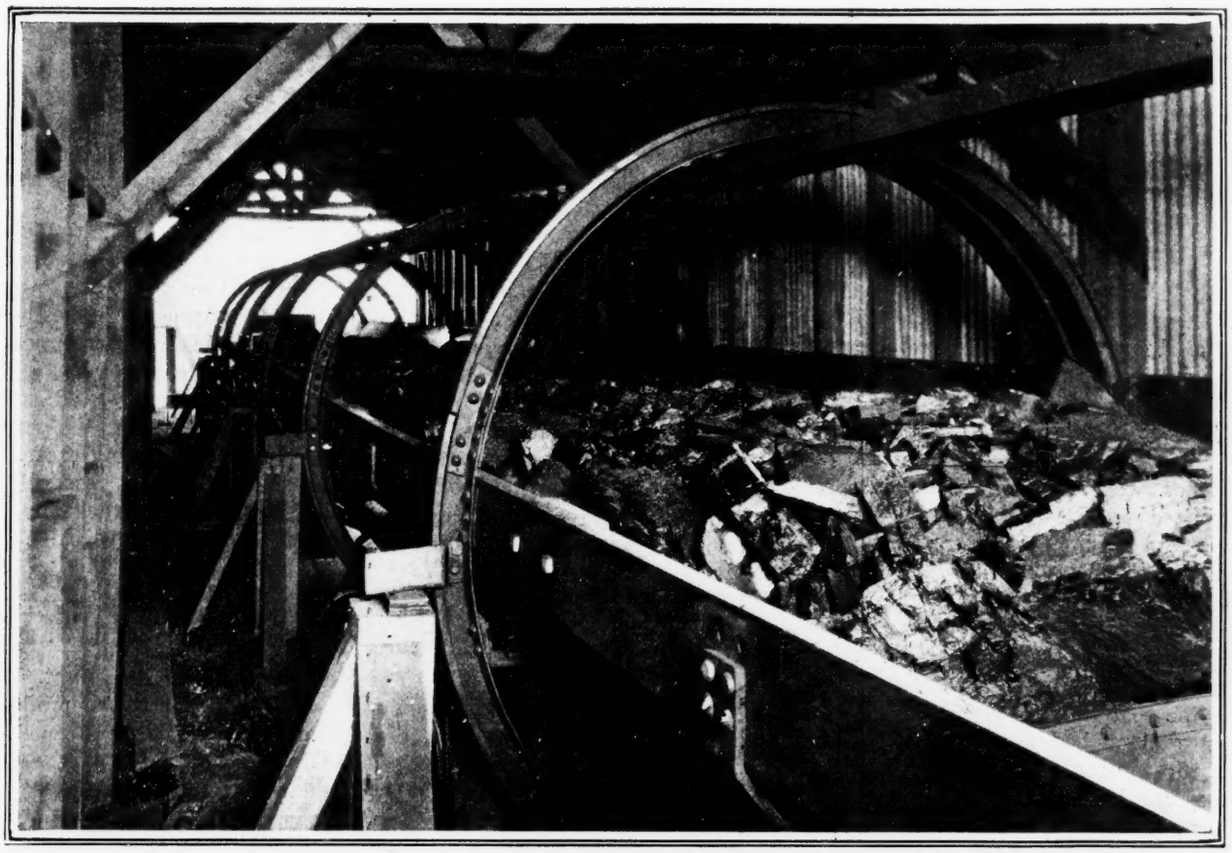
Snapshots in Coal Mining



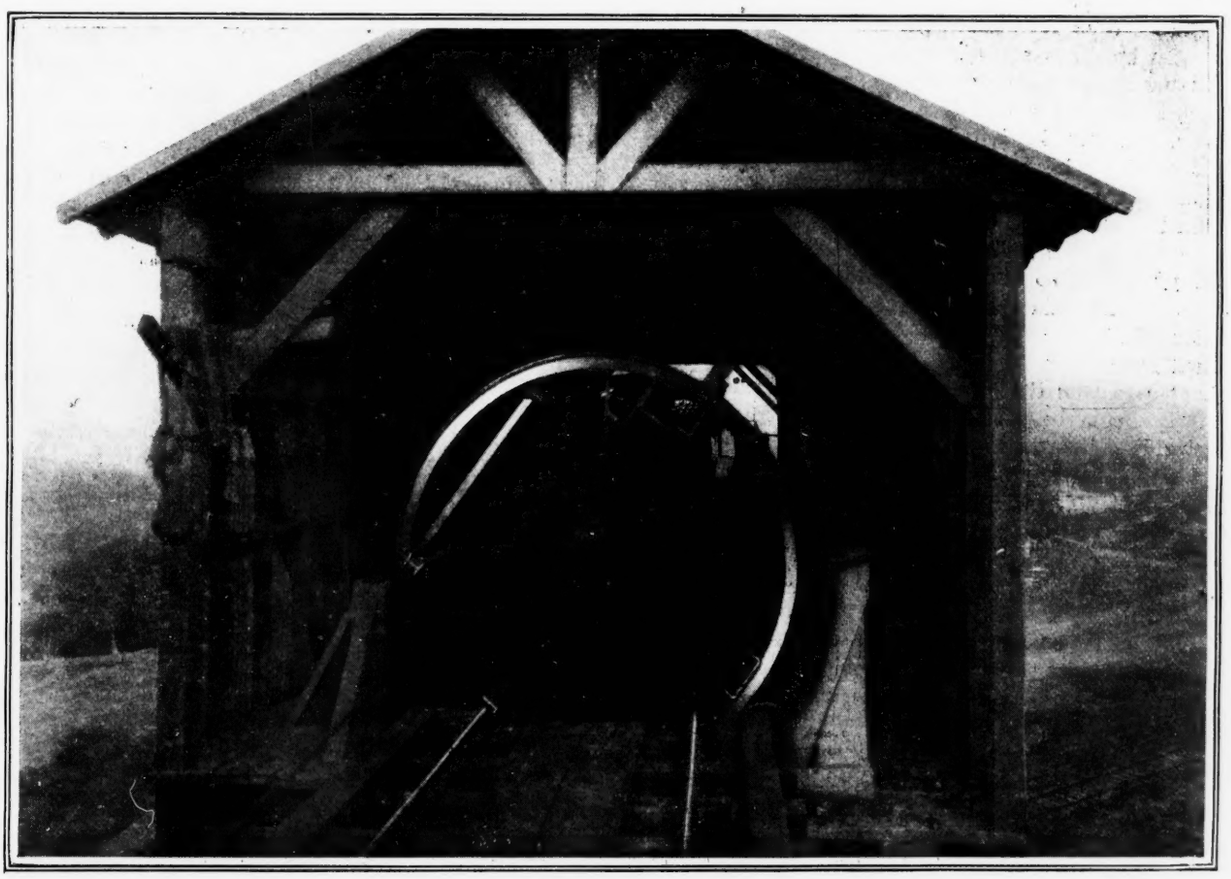
MARYLAND COAL CO., CLAY PRODUCTS PLANT, LONACONING, MD.
The coal to run this plant comes from the Freeport seam, the tipple being shown to the left in the photograph



EGG-PICKING BELT AND LOADING CHUTE AT A SOUTHERN COAL MINE



TRIP OF CARS IN A PNEUMATIC ROTARY DUMP
Dump length is sufficient to admit six mine cars, and is operated by compressed air under control of a man on the tipple floor



SHOWING THE PNEUMATIC ROTARY DUMP IN ACTION

Discussion by Readers

Mining Thin Coal

Letter No. 2—Allow me to suggest that the 32-in. seam of soft Kittanning coal described by H. J. Werder, *Coal Age*, Aug. 25, p. 340, can be worked best by the longwall method of mining. Because of the thinness of the seam, I am not surprised that he has experienced difficulty in holding his men, as the mine is operated in competition with thicker coal. Nevertheless, the seam is workable, though at a less profit than would be realized were the coal thicker.

There are miners who prefer to work in a thin seam rather than in a thick one, provided the coal is at least a yard thick. I have worked in an 18-in. seam myself, but cannot say that it was comfortable. The fact is, however, that when miners once become acquainted with the work they are more willing to stay, especially if the coal is easy to dig. In working this coal, the longwall method would, I believe, have the advantage of throwing the miners together on a single face where they can keep company with each other, which would have a tendency to hold the men, as miners like company when at their work.

General Description of Plan

Briefly described, my plan would be to drive three parallel headings straight from the foot of the shaft and use the middle one for an endless-rope haulage road, brushing the roof to a height required for headroom. Crossroads should be driven to the right and left of these headings and gateroads turned off the crossheadings to reach the face.

Small mules could probably be used to advantage on the crossroads, which should be driven not more than 100 yd. apart, so as to cut off the gateroads at this distance and reduce the distance of tramming on the gateroads. It would probably be necessary to take down from 12 to 18 in. of roof on the crossroads and about a foot on the gateroads. The material thus obtained should be used in building good packwalls on each side of the roads.

I would not advocate taking up the 10 in. of slate in the bottom, as this would expose the fireclay to contact with the mine water and cause it to swell, which would create much trouble. In some instances, in my experience, the swelling of the fireclay in the floor has lifted the track up to the roof, in places, when the weight settled on the packs at the side of the road. In order to prevent this trouble I would brush the roof to obtain the necessary headroom on all roads and leave the bottom undisturbed.

If the seam lies about level it may be possible to extend the endless-rope haulage directly to the tipple. If the cars must be handled up to the face, which is the case where no conveyor is used, they should not exceed a half-ton in capacity. If conveyors are used at the face the capacity of the cars should not exceed 1½ tons.

Should the coal prove very soft and not able to withstand the roof pressure, it may be possible to improve the condition by working the coal on the butts. One method of doing this is to sump in opposite the head of the gateroad far enough to carry a breast of coal along the face. This would permit the gate sidepacks to be built in advance of extracting the coal, and would have the advantage of giving the needed support to the gateroads, in case of a sudden roof pressure being exerted. In my opinion this seam can be worked at a reasonable profit if properly handled and the men become acquainted with the work and satisfied.

JOHN OLDROYD.

Janelew, W. Va.

Unit vs. Departmental Control

Letter No. 1—The Foreword of *Coal Age*, Sept. 15, contrasting the unit or centralized control of mining operations, with the plan of dividing the management into separate and distinct departments, presents some very interesting arguments for and against each of these methods. The comparison proves that the question of properly organizing work and placing the authority for its execution is a perplexing phase of management.

The editor has been kind enough to invite the readers of *Coal Age* to discuss the relative merits of these two systems of control and has outlined the subjects so clearly that, without doubt, the opinions that will be expressed by readers will be of interest and value.

As stated in the Foreword, success has attended the application of each of these methods in coal mining. While some large mining companies have adopted the unit plan and found it of advantage, others have operated on the departmental plan with equal satisfaction and success. The question of which plan has the most in its favor is, therefore, largely one of opinion.

My belief is that the method of dividing the work into separate departments gives the greater promise of economy and efficiency. I am led to this conclusion because of the fact that this is an age of specialization in every line of human endeavor. The doctor specializes on a certain line of practice relating to the eye, ear, nose, heart or some other part of the human body. The lawyer makes a specialty of a certain kind of litigation—chancery, criminal or corporation practice. The teacher specializes in some particular branch—mathematics, language, history or economics. By thus specializing, there can be little doubt that one becomes more proficient in his line.

Let me suggest that a large coal operation should be conducted very much on the plan of our national or state governments. The national government recognizes the President as the chief executive, while the state government regards the governor as its head. Similar to this, a coal corporation looks to the general superintendent or manager as the head of its operating department

My thought is that as the national and state governments are divided into separate departments, each being responsible to the chief executive, there would be like advantage in dividing the work of a large mining corporation into separate departments and make each responsible to the general superintendent or manager.

In this division of work allow me to suggest that where the equipment warrants there should be a master mechanic who would have complete charge of all the machinery used in and about the mine, employing his own men and superintending the work for which he is held responsible.

An electrically equipped mine should have a chief electrician who is likewise responsible for the installation and maintenance of all electrical work connected with the plant. A boss carpenter or foreman should have charge of all building operations and repair work in and about the mine.

The operations underground should be directed and controlled by the mine foreman, who should have complete authority to hire, discipline and discharge all underground employees, including his assistants and firebosses. Here, too, the work in a large mine should be divided and each separate branch put in charge of a boss driver, timberman, trackman, or other worker, as the case may require. each of these bosses being responsible to the mine foreman.

Where each department head is charged with the necessity of producing the largest tonnage at the least possible cost consistent with the safety of life and property, and where they are imbued with the spirit of cooperation, there will be little doubt of the success of this plan.

It has been pointed out that the weakness of the unit or centralized plan lies in the possibility, and often the probability, of one man having more than he can do efficiently. It is well known that efficiency is the industrial slogan of the day and, at present, is more than ever required in the coal industry, by reason of the problems growing out of Government price fixing, which affects all lines of trade. This, with the growing demand for coal, makes the question of efficiency one of the greatest importance.

In closing, let me add that it is my belief that the average workman will do better work when he feels that he is responsible to a boss who is in direct charge of his work. When a man feels that any delinquency on his part can only be acted upon by a chief executive to whom it is reported by a department head, the effect is to make him indifferent and careless.

Briceville, Tenn. U. S. WILSON.

Mine Lamps

Letter No. 9—I am inclined to add a few words to what has already been said on the subject of mine lamps, which my experience of 31 years teaches me is one of the most important matters connected with the mining of coal, as far as safety is concerned.

It is my opinion that no mine, gaseous or otherwise, should be worked with open lights. The many letters that sound the praises of open lights surprise me, because of the fact that there is never any certainty of the absence of gas in a coal mine where there is no record of gas having appeared. I have known instances where mines have been operated with open lights for periods varying from 14 to 23 years, during which time there was no appearance of gas to demand the use of safety lamps. A sudden inrush of gas, however, inflicted on these mines most terrible losses of life. Following those disasters, the mines adopted the use of safety lamps exclusively.

To my mind, the suggestion of working mines with open lights carries us back 100 years. I can see no excuse for this contention when we now have a light that is far superior to the carbide lamp. For safety and efficiency, the portable electric lamp that is now so largely used in mines has no equal.

An electric lamp, with ordinary care, is safe for use in explosive mixtures of air and gas where the most approved type of safety lamp could not be trusted. There is one form of hand lamp of this type for miners' use, and another form of cap lamp used by mine officials and miners. In making an examination for gas, the fireboss must, of course, use a gauze lamp; but the portable electric lamp furnishes the best light for examining the roof and sides of working places.

I do not want to be understood, however, as claiming that the electric lamp insures safety under all conditions. I believe it is a step forward in the prevention of mine accidents and hope there will be others who agree with me in this opinion. J. M. RODDY.

Springfield, Ill.

Coal Production and Booze

Letter No. 2—Since the recent discussion of the booze question in *Coal Age*, I had hoped that every publication in the United States would take up the matter and keep it before the public eye, until Congress would be persuaded to make this a bone-dry nation.

Recently, the statement was made, by a member of the Pittsburgh Coal Producers' Association, to the effect that if strong drink was eliminated from the coal-producing states, the production of coal would be increased 25,000,000 tons a year, assuming there was an adequate car supply for its transportation. This estimate appears only too small when one considers the tremendous effect that the booze habit, as it prevails in mining camps, has on the production of coal from the mine.

DRINK THE GREATEST ENEMY IN MINING

Strong drink is one of the worst enemies of the miner in western Pennsylvania, where it is impossible to get men to work more than a few days a week, even when the car supply will permit the mines to run regularly. The same is true in Illinois and Ohio. I want to ask if this is not a strong argument in favor of a bone-dry nation, in the present crisis.

Attention has been drawn to the extent to which the nation depends on the miner, in the prosecution of the war. When one considers with what care the Government keeps liquor away from its fighting men, it is hard to understand why it does not exercise the same care to eliminate the drink habit from the men who remain at home and whose duty it is to furnish the material for the front.

I have read that it takes ten men at home to supply the wants of one man at the front. I would hate to be that one man who had to depend for his support on ten

of our miners. I fear that it would be necessary for me to take an occasional vacation in fighting, in order to give my ten miners a chance to sober up.

It would seem as though the average miner wants but a scant living and is willing to spend the larger portion of his time and money in the saloon. Quite recently I heard one fellow remark that he loaded one car for his family and the next for the saloonkeeper.

EFFECT OF HIGHER WAGES PAID TO MINERS

Higher wages for the miner means a larger amount of his money spent in the saloon, which affords him less time for work in the mine where he is needed to maintain the production that, at the present time, is urgently demanded. The habitual drinker appears completely under the control of his appetite for liquor, and if this is the case, it is the duty of our Government to take from him the means of satisfying his thirst for drink. This would be but following the old adage, "A bird that can sing and won't sing must be made to sing."

It appears to me that sober-minded men do not realize the mistake of permitting the saloon to remain as a temptation to those who are too weak to resist its influence. The argument that "what a man drinks is his own business" ceases to apply today. The results of the drink habit are such that the best interests of the community can only be served by driving the manufacture and sale of liquor from the country. It used to be that prohibition was preached from the pulpit and the platform; but, today, it is preached by the woeful results observed on every hand—the besotted drinker and his starving family, while the nation waits for coal.

Nashville, Ill. J. T. ANDERSON.

Mine Foremen and the Wage Increase

Letter No. 3—I have been reading the letter of "Experience," *Coal Age*, Sept. 8, p. 422, but fail to see where this foreman has any kick coming. He understood what the responsibilities and difficulties were when he accepted the position of foreman. The difficulties are not nearly as great at the present time in this country as they were a few years ago in England.

The foreman of a mine in England, in addition to his other duties, was obliged to make up his pay bills every week, showing all deductions, percentages and allowances, besides ordering and keeping track of all tools used in the mine and seeing that the mine complied with the provisions of the Coal Mines Regulation Act, which were more stringent than the mining laws in this country.

"Experience" seems to be quite sore because his assistant, who he admits worked overtime, draws bigger pay than himself. Let us remember that what the other fellow gets is none of our business. If we are not satisfied with the pay we receive, it is up to us to take the matter up with the company; and if they say they cannot entertain the idea of an increase, then it is our privilege to look for another job where we can get what we believe our services are worth. No one will deny that it is every man's right to get the most for his labor, but we should not find fault because another man's pay is larger than our own. The question is an individual one and the value of a man's labor is what he can get.

Speaking of the necessity of hunting men at night, my friend should remember that that is the duty of every foreman who has the company's interests at heart. It is up to him to see that nothing is left undone that would hinder the mine from making a good start in the morning. There are different ways, however, of meeting this duty. The foreman can generally arrange matters so that the night work will be in charge of a man who will be responsible for that shift. In case there are one or more men short, it would be his duty to find men to take their places. A suitable penalty for failure to report for duty or send a substitute might have a good effect.

FORETHOUGHT AND TACT OVERCOME DIFFICULTIES

As fireboss, I have frequently found it necessary to call up the mine boss at midnight to tell him we were a man short. But he had it so arranged that he could reach the men he wanted on the telephone and was not obliged to leave his house to hunt them. If "Experience" would do the same, he would not be obliged to face the "foreigner's dog," which, it must be allowed, is not a pleasing situation even in broad daylight.

On the whole, it seems to me that our friend is allowing many things to disturb him that it is in his power to arrange. A little tact, in dealing with his assistant, whom he considers has a "pull," would quickly settle any difference in that direction. It is up to the foreman to see that his assistant performs the work required of him and does not overstep his place.

I always think that the man who is keen to overcome difficulties as they present themselves is sure to get on well with the company, which has troubles of its own and does not want to be burdened with those that the man in charge should arrange himself. My advice is: Don't kick; be satisfied with your work until you scent something better. TIMOTHY GOLDON.

Clinton, Ind.

Uncertificated Mine Foremen

Letter No. 10—After reading the many letters in regard to employing uncertified men to act as mine foremen, I feel I ought to say a word along this line, myself. It would seem that some of the writers of these letters do not consider how difficult it is for coal companies to secure competent men capable of conducting the operations of a mine successfully.

In my opinion, the mine foreman is one of the most important links in the chain; and, if this is the case, there can be no doubt that he should be thoroughly posted on all mining matters and be acquainted with the principles of mining. There is nothing that will detract so much from efficient service in the position of mine foreman as the desire of men to hold responsible positions, who yet take no trouble to prepare themselves for the duties of that position.

We often hear a man who claims to be a practical man excuse himself from taking the examination by saying that he does not possess the ability to write down what he knows. Claiming that he is a practical mining man, he demands the same right to supervise the operation of a mine as the man who has qualified for the position and holds a certificate of competency

Now, in my opinion, any practical mining man should have little difficulty in preparing himself in such a manner that he would be able to pass the examination required by law and obtain his certificate. It is the aim of most examining boards to secure thoroughly practical men who have some knowledge of the principles of mining coal.

Some writer has referred to the work of supervisors in the mines of Germany, and another tells us of deputies in England who make their rounds with a kit of tools with which to repair doors and brattices, lay ties in the track and put down switches, while looking after the general safety of the men.

Tales like these appear trifling, and it is hard to imagine how any efficient work can be done in supervising the mine when a deputy is employed in such work. The tasks mentioned here should never be considered as a part of the duties of a mine foreman or his assistant. These officials have all that they can do to see that the requirements of the law are fully met. W. K. RAY.

Windber, Penn.

Letter No. 11—In my opinion, there are very few uncertified mine foremen who are worthy of the name or capable of performing the duties of that office. There must be something wrong with a man who aspires to be a mine foreman and yet cannot pass the examination that is required in order to obtain a certificate of competency.

The passing of the required examination is much easier than performing successfully the duties of that office. It is my belief that the man who cannot pass the examination is not fit for the office, which requires both theoretical and practical knowledge and experience.

I believe that, as a general rule, miners will not respect and trust a man who does not hold a certificate, to the same extent that they would trust a certified man. There would be no feeling of security while working in a mine in charge of a man who could not prove his competency in examination. Working in such a mine would be like riding on a train that was run by a brakeman as engineer. JOHN BOHN.

Snow Shoe, Penn.

Letter No. 12—Though holding a certificate as mine foreman and having worked all my life in the mine, I want to say that there are many men working in mines whose education will not permit them to stand an examination before a mine examining board. Their knowledge of the theory of coal mining may be small indeed, and yet their practical knowledge may be superior to my own.

If put to the practical test, many of these men could handle a mine better than some foremen who hold certificates. There are some men who have qualified in the examination and received certificates of competency who have never seen the inside of a mine. In most every such case the certificate has been secured through some political influence or through friendship of one or more members of the board.

For a certificated mine foreman to claim that he is more capable of managing a mine than a man who has not obtained his certificate always appeals to me as selfish and as evidence of a narrow mind. In some states the certification of mine foreman is not required by law, and it would, evidently, be a waste of time and money for a man to qualify himself under those conditions. What is needed, in that case, is a sufficient knowledge of mining and practical experience to insure success.

The necessary qualifications of a mine foreman are not all included in the requirements of an examination. He must have an ability to judge human nature accurately and to handle men successfully. He will often be required to estimate costs of different methods and systems, although this work is generally performed by the superintendent or the mining engineers of the company. The test of a foreman's ability can only be determined by the skill and success with which he performs his duties, and this will depend largely on his judgment as well as his knowledge of conditions and affairs.

In closing, permit me to say that I do not think the prosecution of the war will seriously affect the status of mine foremen in this country. Most of our mine foremen who have proved their ability are past the age limit set for the soldier by the draft law. The duty of these men, in respect to the war, is to produce the largest tonnage possible, so as to meet the growing demand for coal. In doing this, a foreman is fulfilling his whole patriotic duty to the country.

Kingston, Penn. FRED B. HICKS.

[The further discussion of this subject will appear under the title "Qualified Mine Foremen," in the hope of showing what should be the test of a qualified foreman—Editor.]

"Squeeze" vs. "Creep"

Letter No. 1—Kindly permit me, as an experienced miner, to give my idea of the meaning conveyed by the terms "squeeze" and "creep," so frequently used in coal mining and which are referred to in the reply to the inquiry relating to "Squeeze in Pillar Work," *Coal Age*, Sept. 15, p. 468.

As I have learned to understand the use of these terms, they refer to somewhat different conditions in the mine. Let me say, according to my notion, there must always be more or less squeeze before there can be a creep. On the other hand, there can be a squeeze without its producing a creep.

For instance, suppose when extracting pillars there are a number of small stumps or blocks of coal left behind. Where the bottom is soft and the roof hard, this will have the effect, as explained in the inquiry, to throw the weight too far ahead, with the result that the roof and bottom will meet before the former will break.

When this occurs, it frequently becomes necessary to shoot the roof in order to cause a break and fall, which is a big expense to the company besides causing a loss of coal that cannot be recovered. It is this condition that I would call a "creep." It is caused by the incomplete extraction of coal in pillar work.

Permit me to say that one can always expect to look for a squeeze when undermining the bowels of the earth. But, by employing careful and competent miners, in pillar work, it is possible to avoid a creep.

Bracken, Penn. W. H. MCCRACKEN.

Favoritism vs. Discipline

Letter No. 4—I was greatly interested in reading the letter of "Rixey," *Coal Age*, Aug. 4, p. 211. The incidents that he recites illustrate forcibly the truth that favoritism is the nemesis of discipline, in the sense that its practice in the mine is destructive of discipline.

If a mine foreman is unpopular because he treats everybody alike and favors no one, it is certain that he will be much more unpopular with everybody, except his small circle of favorites, when his leniency toward them is clearly manifest. Favoritism creeps into the most perfect systems and organizations. It is a cankerous sore that handicaps the discipline of the mine in proportion to the extent to which it is practiced by the man in charge.

For a foreman to punish an employee for an alleged infraction of his rules, by dismissing him from the company service, and then overlook the offense of another guilty of the same act is a manifest injustice; and the injured one will not fail to quickly observe the fact and advertise it among the men, to the great disadvantage of the boss. There should be but one judgment for all offenders of the same class. The same rule and punishment should apply to all alike. No exception should be made in any case, except it may be in the showing of leniency for a first offense, but even this should apply to all with equal force.

Where Favoritism Is Often Displayed by a Boss

There are many reasons assigned for favoritism and these are often deeply rooted and tenacious, but discipline requires the setting aside of one's personal feelings and sentiments. The chief factors of favoritism are those that concern personal friends, who appear to have a natural claim on our friendliness; exceptionally good workers, who may become obsessed with the idea that they enjoy special privileges; men who watch their chance to do little things for the boss; and a few who bestow occasional gifts that are not always expected, however, to bring a return.

These relationships of a boss to his men severely test his firmness in maintaining discipline in the mine. The trial comes when opportunity for advancement is presented and the boss recognizes no favorites. There is the danger that personal friends may become less friendly; good workers less efficient; and favors and gifts to the boss less frequent. But a firm adherence to discipline and the giving of equal justice to all will command respect in the end, when it is seen that every worker is accorded equal rights.

Favoritism, in any form, is a handicap to discipline. The blending of these two elements must always prove a travesty and result eventually in failure. The mine foreman that will mete out equal justice to all his men and have no favorites will find that his personal friends, good workers, willing helpers in many ways, donors of gifts and other candidates for his favor, will soon loose their grouch and fall in line with the work.

What I have said here, however, must not be taken to mean that an inefficient workman shall have consideration in preference to a more competent man, because of his being next in line of preferment. Efficiency and competency demand recognition in every worker, and there is no display of favoritism in recognizing the capability or the fitness of a man for a certain position, or the performance of a given task. Such preferment, on the ground of capability, betrays no partiality on the part of the boss and has no tendency to weaken discipline.

When men discover that a certain one of their number is immune from discipline, they begin to study his methods and, by degrees, emulate him, hoping to gain the same favor with the boss. It is this condition that is destructive of all discipline. W. H. Noone.

Thomas, W. Va.

Letter No. 5—The reading of the letter by "Rixey," *Coal Age*, Aug. 4, p. 211, impresses one with the thought that the incidents mentioned form a series of direct and willful violations of the mining law and should all have been punished as they deserved, without regard to who the guilty parties were or their positions or connection in the mine.

Of all times, the present crisis is no time to condone violations of mining laws or mine regulations. Such violations should not be treated lightly, and instances such as those described by "Rixey" should be promptly reported to the district mine inspector, whose duty it is to prosecute the guilty ones and make an example of them.

If we reflect for a moment on the number of accidents that are ascribed to the movement of cars in mines, we cannot but be impressed with the need of thorough and searching inquiry into such cases as these, where miners hide themselves from the triprider and watch their chance to jump the trip after it has started. Too often the act proves fatal to the offender, who, missing his footing, falls under the cars and is ground to pieces. The usual verdict of the coronor's jury is "Killed by being hit by a trip of cars while walking on the haulage road." It would be more truthful to say "Killed when attempting to steal a ride on a moving trip of cars."

Fair Dealing Mistaken for Favoritism

The favoritism charged against the mine foreman in "Rixey's" letter, if it were true, shows a great lack of the sense of responsibility on the part of that official. The charge, I am glad to say, was refuted, later, by "One Who Knows," in Letter No. 2, Aug. 25, p. 336, and it is to be hoped that the facts as there explained are correct, and the mine foreman was not guilty of favoritism, but dealt justly with each man, as he felt was right.

In closing, let me say that the mining laws of Pennsylvania provide for almost any emergency that can arise in the mines, and there is no excuse for a foreman stepping aside from the law and showing favoritism or leniency toward a man who has violated its provisions or the regulations of the mine. As I have just stated, such acts should be promptly reported to the district mine inspector for his action as required under the law.

What is needed in every mine foreman is backbone enough to carry out and enforce the law. If this is done, mine accidents will be less frequent than now appear in the reports of the state mine inspectors.

West Leisenring, Penn. Robert W. Lightburn.

Inquiries of General Interest

Tractive Effort vs. Drawbar Pull

Kindly state what is the difference between the meaning of the terms "Tractive effort" and "Drawbar pull."

Springfield, Ill. MOTORMAN.

As used in locomotive practice, the term "tractive effort" is the force developed by the motor or motors as exerted at the circumference of the drivers, and effective to move both the locomotive and the trip. The "drawbar pull," as the words indicate is the force exerted at the drawbar to move the trip. It is less than the tractive effort, by the force required to move the locomotive.

Shaft vs. Slope Opening

We have a seam of coal lying practically level, at a depth of 118 ft. below the surface. The coal does not outcrop at any point on our property and it is necessary, therefore, in contemplating the working of this coal, to decide whether it will be more advantageous to sink a shaft or a slope to reach the coal. We would appreciate the opinion of *Coal Age* and its readers on this question.

If a slope opening is advised, kindly state the maximum percentage of grade or the inclination of the slope, with a view to decreasing its length, which will lessen the cost of sinking. THOMAS HARRIS.

New Florence, Penn.

The question of choice of opening and its location is often a very important one, in planning the development of a coal field. This is particularly true where the seam has more or less inclination, which would affect the economical haulage and drainage of the mine and, incidentally, the location of the opening. It is generally desirable to place the mine opening on the dip side of the property if shipping facilities on the surface will permit. In the present case, however, the seam being level and having no outcrop on the property points to the choice of a shaft opening as being the most direct means of reaching the coal from the surface.

The shaft should be located at the most convenient point with respect to securing suitable shipping facilities, building site, and water supply. As far as practicable, the location should be as close to the center of the property as these conditions will permit. A central location of the shaft will afford a more uniform and rapid development of the mine, at a minimum of cost. The question of a suitable site for the surface buildings and the shipping facilities afforded, however, will be the controlling factors in the location of a shaft for working a level seam.

The choice of a slope opening, in preference to a shaft, can only be considered in reference to an inclined seam, or a flat seam lying at a very moderate depth and which can be reached from a point on a hillside affording good shipping facilities.

The inclination of a slope can be anything from a few degrees to proximity to the vertical, the latter condition being generally termed an "inclined shaft." The choice of inclination will depend largely on the style of equipment to be provided. *Coal Age* will be glad to have readers discuss this question further and offer such suggestions as they have learned by experience are of advantage.

Estimating Required Speed of Fan

When making application, recently, for a position as mining engineer with a large coal company, in this state, the manager sent me the following question to test my ability to handle such matters:

Question—It is desired to erect a 14-ft. fan at a mine, to produce 120,000 cu.ft. of air per minute, under a water gage of 1.5 in. Give the revolutions per minute required for this fan to circulate the given quantity of air.

My reply did not seem to satisfy the manager, as I was unable to show the method of solution. Kindly explain how the required speed of this fan is calculated.

Chicago, Ill. MINING ENGINEER.

The required speed of this fan can best be found by referring to the usual formula for calculating the theoretical water gage (I, in inches) developed by a fan having a peripheral speed (u, in feet per second), which is as follows:

$$I = \frac{1.2 \times 12}{1000} \frac{u^2}{g} = 0.00045u^2 \qquad (1)$$

Then, calling the diameter of the fan D and the number of revolutions per minute n, the circumference being πD, we have,

$$u = \frac{\pi Dn}{60} = 0.05236Dn \qquad (2)$$

But, assuming that the best results are obtained when the pressure absorbed in the fan is two-fifths of that required in the mine, the mine water gage is $5 \div (2 + 5) = 5/7$ of the theoretical gage developed by the fan. In this case, the mine gage being 1.5 in., the theoretical water gage (I) developed by the fan is $1.5 \div 5/7 = 2.1$ inches.

Finally, combining the equations 1 and 2 and substituting the values $D = 14$ and $I = 2.1$ in., we have, for the value of n, or the required speed of the fan to develop this water gage,

$$n = \frac{900}{D}\sqrt{I} = \frac{900}{14}\sqrt{2.1} = 93.16 \text{ r.p.m.}$$

The breadth of this fan is not mentioned; but it should be about five-eighths of the diameter of the intake circle, which in a double-intake fan is one-fortieth of the square root of the quantity of air to be circulated. Thus, for a circulation of 120,000 cu.ft. per min., the diameter of the intake circle of a double intake fan is $1/40\sqrt{120{,}000} = 8.66$ ft., and the breadth of the fan is then $5/8 \times 8.66 = 5.4$ feet.

Examination Questions

First Examination in Washington, Held Under the New Law

(First-Class Questions)

Ques. 1—Give place and date of birth; say whether a citizen of the United States; and state briefly your mining experience, number of years employed in coal mines, nature of employment, certificates held, if any.

Ques. 2—What are the duties of a mine foreman, as described in the state mine law?

Ans.—Sec. 103 of the Coal Mining Laws of Washington requires the mine foreman to keep a careful watch of the ventilating apparatus, ventilation, airways, travelingways, timbering and drainage; to see that all stoppings are properly built and crosscuts made in all chutes, breasts, rooms, gangways, entries and levels, and to see that these crosscuts are closed when required to conduct the air forward to the working face, and attend to all other duties pertaining to safety.

Sec. 104 gives the mine foreman charge of all inside workings and the persons employed therein. Sec. 105 requires the mine foreman to make and sign with ink, in a book provided for that purpose, a report showing the general condition of the mine, stating any danger that may have been observed or reported during the day and any failure of the mine to comply with the law. Also, once each week he must enter in said book the report of air measurements made by himself or his assistant, giving the place where and date when the measurement was taken, area of crosscut or entry, the velocity of the air and the number of men employed in each separate split. He must, each day, read carefully and countersign in ink the reports in the fireboss' book.

Sec. 106 requires the mine foreman to see that all miners, and other men employed underground, walk or climb to or from their working places to the surface, by way of one of the travelingways, escapements, or outlets, at least once every six months. Sec. 107 requires the foreman to see that a danger sign is placed at the mine entrance when it is not safe for men to enter. He must see that all danger signs are in good condition and have same repaired if found defective. He must withdraw all men from the mine if the ventilating fan is stopped or the ventilation otherwise interrupted, and not permit them to enter again until the mine has been examined by himself, his assistant or the fireboss and reported safe.

Sec. 108 requires the mine foreman to give prompt attention to the removal of all dangers when reported to him, or to notify the men to keep away from the place. He or his assistant must once each week travel and examine all air courses, travelingways and openings leading to old workings or falls, and to record the results of his examination in a book and sign the same in ink.

Sec. 109 requires the mine foreman to see that at least one borehole is kept 20 ft. in advance of any entry or working place being driven in dangerous proximity to old workings supposed to contain water or gas. Flank holes must also be driven at least 12 ft. in advance, and such places must not be over 8 ft. wide. Sec. 110 requires the mine foreman to see that the fireboss has left his mark, as required by law, in each place examined and (sec. 111) to visit each working place, himself or his assistant, each shift while the men are at work, and to give especial attention to the drawing of pillars. Sec. 112 requires the mine foreman to at once visit the scene of any accident and give the injured person or persons the needed attention and remove them to their homes or to the hospital.

Ques. 3—What are the regulations in the state mine law, in regard to the inspection of a mine by the fireboss, and what report is he required to make and what information should the report contain if gas is found?

Ans.—Sec. 113 requires the fireboss to examine carefully, within 3 hours of the time the first shift enters the mine, every working place in his charge, where men have not been employed at the face within 90 min. previous to starting the shift; and to examine all open places adjacent to live workings and every unfenced road leading to abandoned workings. He must see that the air current is traveling in its proper course and use no other than an approved safety lamp. He must examine for all dangers in all portions of the mine in his charge and leave his mark at or near the face of every place examined, showing the date of the examination, as evidence that he has performed his duty.

Sec. 114 requires the fireboss to place a danger signal at the entrance and at all openings leading to places where explosive gas is found or other dangers exist. Sec. 115 requires each fireboss, after completing his inspection and before permitting the men to enter the mine, to record the results of his examination on a bulletin board at the mine entrance, stating each place where gas was found and all other places as clear. He must make a like report with ink, in a book kept for that purpose at the mine office on the surface. He, or the mine foreman, or assistant foreman, must reexamine all places where gas has been found, before permitting men to work in such places and give personal attention to the removal of the gas, which must not be done by brushing.

Ques. 7—An airway 8 x 12 ft., 4000 ft. long, has 38,800 cu.ft. of air passing per minute. Find the rubbing surface, pressure and horsepower.

Ans.—The rubbing surface of this airway is $4000 \times 2(8 + 12) = 160{,}000$ square feet.

The pressure caused by this circulation is

$$p = \frac{ksQ^2}{a^3} = \frac{0.00000002 \times 160{,}000 \times 38{,}800^2}{(8 \times 12)^3} = 146 \text{ lb. per sq.ft.}$$

The horsepower producing the circulation is

$$H = \frac{Qp}{33{,}000} = \frac{38{,}800 \times 146}{33{,}000} = 171.6 \text{ hp. nearly}$$

Coal and Coke News

For the Busy Reader

The coal deposits about Cuba, Ill., are said to be practically exhausted.

* * *

A coal shortage threatens to tie up many industries in Cleveland and other cities in Ohio.

* * *

Figures compiled by the Geological Survey show that the railroads consumed one-fourth of all the coal mined in the United States in 1916.

* * *

Dr. Garfield plans to take care of the small consumer by requisitioning spot coal at the mines and directing its sale through local dealers at Government-fixed prices.

* * *

If everything else fails, the coal produced will, it is said, be pooled under Government control and distributed arbitrarily by Government agencies wherever most needed.

* * *

Is there any food for thought in the fact that since the fixing of prices for anthracite and bituminous coal the output of the former has been growing, while for the latter it has been decreasing?

* * *

The anthracite mined in 1916 amounted to 78,195,083 gross tons, valued at $202,009,561, a decrease in quantity of 1.6 per cent. and an increase in value of 9.4 per cent. compared with 1915.

* * *

We already have meatless and wheatless days, why not a "heatless" day? One day in each week, this coming winter, when we'll let the furnace die out. Why not? Anything to make the world unsafe for autocracy.

* * *

The price of coke has been reduced to $6 net per ton by the recent order of the War Industries Board. This makes a reduction of $10 from the original price of $16. It takes about $3 worth of coal to make a ton of coke!

* * *

Rivers in the vicinity of coal mines in Pennsylvania are being dredged for coal that was lost in former years by a wasteful washing process, now discarded. About 250,000 tons of coal is recovered in this manner annually.

* * *

Selling agencies which are in any way connected with coal operators will not be permitted to make the additional jobbers' charge of 15c. allowed in the President's price schedule, according to a ruling of the Fuel Administration.

* * *

The youth of Pittsburgh may not be seriously alarmed at the prospect, but unless a sufficient supply of coal can be contracted for, to be used in the schools of that city, the board of education may have to close a number of schools early in December.

* * *

Owing to a shortage of natural gas, many manufacturers in the Pittsburgh district have been experimenting with coal dust, which they assert can be substituted for gas. The process is to blow the crushed coal into the openhearth furnaces by means of compressed air.

* * *

The wonderful electric signs that make day out of night in many of our larger cities and towns may be put out of commission this fall, because of the coal shortage. It has been suggested that all electric signs be banned for the time being, so that the coal supply may be used to greater advantage.

* * *

What's going to be done about coal prices? The prices now fixed discourage production in many mines at a time when every ton of coal that is available is needed and production should be speeded up to meet the requirements. Reports are continually coming in of mines that are forced to suspend because to sell coal at the President's prices means to run at a loss.

Save coal by keeping cool, says Fuel Dictator Garfield to householders. Most Americans live in super-heated houses, he states, and if every family will reduce the temperature of his house at least 5 deg., it will mean millions of tons of coal saved. The coal supply can be conserved by more economical firing methods, by switching the furnace door, by heating only those parts of the house that are in use and by sifting the ashes.

* * *

County fairs and circuses should be tabooed by the Fuel Administration until after the war. At any rate they should not be permitted to exhibit in the vicinity of mining towns. There was a county fair in one of the large producing districts not long ago, and the miners knocked off work to see the exhibits. Soon after a circus visited the same neighborhood, and everybody quit to see the elephants. And this at a time when the industry should be stimulated!

* * *

The next thing to not being able to get sufficient coal is to get along with less. According to the Geological Survey, there is not going to be sufficient coal to go around this winter—that is, at the rate at which our industries are now burning it up. Dr. Garfield, therefore, advises economy and saving in the consumption of coal in order that there be no privation and suffering when the cold weather comes; nor that industries vital to the successful prosecution of the war be forced to suspend.

PENNSYLVANIA

Anthracite

Weatherly—A large mine cave, over 100 ft. in circumference, and more than 50 ft. deep, occurred at Drifton. The cave makes it possible to see a part of the underlying coal bed.

Hazleton—Agents of the soft-coal operators of West Virginia are touring the anthracite fields looking for men, and more than 100 miners have already been induced to leave the Northumberland district.

St. Clair—The Philadelphia & Reading Coal and Iron Co. is making improvements and developing plans for new mining operations which may increase its output of anthracite in the Pottsville basin by 500,000 tons a year.

Hanover—In the vicinity of Lee Park houses are coming into existence almost overnight in the construction of 40 residences for the Lehigh and Wilkes-Barre Coal Co.

Bituminous

Altoona—The Chamber of Commerce is planning to improve and keep in condition various byroads leading from the smaller mines in this section to the state highway from Altoona up the Bushkorn to the Cambria County line. This will facilitate the hauling of coal from the mines.

Russelton—Russelton No. 2, the mining village in the Russelton mining belt, where the Bessemer Coal and Coke Co. is putting down a shaft, will be a smokeless village. The entire mining machinery will be operated by electricity.

Monongahela—One man was killed and six others were injured, one seriously, in a fall of slate at the Sunnyside mine of the Pittsburgh Coal Co., at Sunnyside, two miles north of Monongahela, recently. The men were engaged in cleaning up slate and coal, and while they were removing roof timbers the roof collapsed.

Johnstown—Progress is being made by the Cambria Steel Co. on its new mining plant and battery of coke ovens in the valley below the Hinckston Run Reservoir. Considerable machinery for the sinking of the two new shafts and the establishing of the new boiler house have arrived on the site. A large force of men is at work.

The operators of Johnstown and vicinity have received their first coal orders from the Government. The Government is to pay $2 per ton for the coal, the price fixed by the President. The members of the Low Volatile Bituminous Operators' Association have expressed willingness to run their plants even at a loss until the readjustment of prices has been decided upon.

WEST VIRGINIA

Clarksburg—Twenty-five coal mines near here have been compelled to close within a week because operators were unable to mine and market coal for $2 a ton, the price fixed by the Government, according to Daniel Howard, a leading operator.

Moundsville—The crying need for coal has prompted the Central Mining Co. to erect a large river tipple with a loading capacity of 1200 tons per eight hours at its Clifford mine, opposite Moundsville. The new plant will help local river industries that can use coal via the river.

Fairmont—By lease the Helen Run Coal Co. recently acquired the Sewickley coal rights on a tract of land in Lincoln district from the Davis family. The company is to provide an expert engineer and the Davises are to receive 10c. per ton of 2000 lb. on each ton mined.

Among the deeds recorded by County Clerk Martin recently was one from Z. G. Morgan to the Fairmont & Cleveland Coal Co. It conveys all the Sewickley and Mapleton vein of coal and mining rights and privileges for the removal of same. The tract lies along the Monongahela River in Paw Paw district.

Worthington—A party of coal men from Connellsville, Penn., was here recently and made arrangements to open up mines on the Annabelle branch of the Baltimore & Ohio R.R., where the men control a large acreage of the Sewickley vein of coal. It is rumored that another large mining town will be built on Teverbaugh to accommodate the employees of the two mines it is intended to open.

Chester—A new coal mine has been opened up on the Robert E. Allison farm, near the Locust Hill cemetery. The mine has been driven into the hill a distance of 400 ft. A 4-ft. vein of coal underlies the tract.

Charleston—The traffic has become so great over its lines that the Coal and Coke R.R. will tear up all track and replace the steel rails with 85-lb. rail. In addition, the railroad intends to add greatly to its rolling stock so as to facilitate the handling of freight.

Reports are at hand that the town of Kanawha Station is without fuel, on account of the inability of the Consolidation Coal Co., of Fairmont, to supply coal, as usual, before Nov. 20, due to the heavy outside demand. An appeal for relief has been sent to the West Virginia Public Service Commission, but nothing apparently can be done.

MARYLAND

Cumberland—The Vang Construction Co. is conducting an extensive coal-stripping operation at Lonaconing. Three steam shovels, three dinkey engines and a number of coal cars have been installed and the work is well under way. This great undertaking is on the property of the Georges Creek Coal Co.

KENTUCKY

Fleming—Two transportations of 100 men each arrived here recently to be employed by the Elkhorn Mining Corporation. The company is making an increase in its output. Additional mines are also to be opened on Bottom Branch this fall.

Indian Bottom—The Blackey Coal Corporation, recently organized, is acquiring additional properties for development near Blackey. Development work has already been started.

Hazard—Operating companies around Hazard now have all the labor they can use—a large number of men having come into the field from the strike zone in the Jellico district of Tennessee. All mines in this territory are now operating full time. It is said the tonnage for September will show a large increase.

Benham—The Wisconsin Steel Co. announces some increases in its plant which will necessitate the employing of several hundred additional men.

The United States Coal and Coke Co., a subsidiary of the United States Steel Corporation, starting the development of 20,000 acres of Looney Creek coal lands near Benham, has purchased an acre of land from W. W. Cornett upon which it will construct office buildings. The price paid was $10,000. A model town, planned after Gary, Ind., is now under way. Two thousand men are being employed. Ten thousand tons of coal daily will be the approximate daily product.

Elkhorn City (Praise P. O.)—The Kentucky-Elkhorn Coal Co. will construct fifty additional miners' houses, open new mines and build Y. M. C. A. and welfare buildings.

Whitesburg—The Kingdom Come Coal Co.'s construction work has been delayed by legal proceedings instituted by surface owners at Sandlick Creek, where the company started to put in a first-class coal operation.

Seco—A large number of colored men going into the coal fields were wounded here recently when a Louisville & Nashville passenger train ran into a runaway yard engine which broke loose from the Neon yards. Three of the negroes were killed and twenty-five or more seriously wounded.

OHIO

Bridgeport—Local mine officials are complaining due to the selective draft taking from the mines several of their best miners. During the departure of the last two quotas, from eight to ten miners from each mine have left for their respective camps. Several other miners have already enlisted in the different departments of service while many more have been included in the draft call and are being conscripted.

Smithfield—The Superior Coal Co. has started in operation the first of its five Bucyrus steam shovels on its coal-stripping operation at Chandler. The company has 3000 acres of rich coal land at that place and the coal is from 4 to 60 ft. under the surface. It is estimated that by the stripping process the coal can be mined at a cost of from 40 to 75c. a ton, while by the mining process the cost is from 90c. to $1.25. The company expects to begin shipping coal early in October.

Cincinnati—For the second time this season the city of Cincinnati has been unable to obtain any bids whatever on the coal supply for city institutions, of which about 133,000 bushels will be required for the main pumping station of the waterworks alone. It has been decided, therefore, to postpone further advertising until the expected adjustment of prices by the Government has taken place.

Youngstown—The Trumbull Steel Co. has purchased a half interest in the Pitt Gas Coal Co., of Cleveland, with mines in eastern Pennsylvania, for the purpose of protecting its coal supply. It is understood that the move will take care of the company's coal needs for the future, as the output of the coal company is about 800 tons a day.

The local authorities have been unable to obtain any bids from coal companies for supplying coal for heating the public schools, and for other purposes, and retail dealers have very little coal on hand. The company supplying natural gas has also warned the public that the supply of that fuel will be short during the winter, on account of the unusually heavy demand.

A miniature city is under way at Nemicolon, near here, for the purpose of developing coal lands of the Youngstown Sheet and Tube Co. The city is to be located over the state boundary in Green County, Pennsylvania. Six hundred modern dwellings are to be erected. Four hundred workmen are to be employed at the mines.

ILLINOIS

Marion—The Old Keystone mine recently began hoisting coal again. Fred W. Cool has been pushing the work of getting the mine into shape ever since its purchase by the Cameron Coal Co. on Dec. 2, 1916.

Benton—Five miners were killed and six others seriously injured when a 2-ton counterbalance slipped from the guides and fell through the roof of a cage in which 14 men were working at the Orient mine here recently.

St. David—After being idle several months, the Black Rock Coal Co.'s mine, two miles north of here, has reopened. Dr. E. B. Bailey, of Lewiston, Ill., and John Woods, of Canton, will conduct the business and Woods will be in direct charge of the mine. Doctor Bailey and Mr. Woods recently acquired a controlling interest.

IOWA

Harleyville—A 30-in. vein of coal was discovered a short time ago in a pasture owned by Charles Harvey, while men were digging a well. The coal is of a fine quality and the seam has a slant of about one foot in every three. The pasture has been leased and development work has begun.

KANSAS

Topeka—The coal mines of Osage County were temporarily reopened and the operators will be allowed to charge $3.75 per ton at the shaft. This concession is granted pending final establishment of rates after a Government investigation. This means an increase of 95c. per ton over the price fixed for the Osage district some weeks ago.

Foreign News

Amsterdam, Holland—Budapest dispatches printed in German newspapers arriving here tell of an explosion in the Lubenz coal mines. Fifty-nine persons were killed and 55 injured.

Seward, Alaska—A 4-ft. seam of coal, 8 ft. below the surface and only 30 ft. from the main line of the United States railroad in Alaska, has been discovered at Mine 175, not far from Seward.

Barcelona, Spain—The Spanish Government has taken up the matter of promoting the mining of coal in a vigorous manner, and has provided for the organization of a general pool of all the leading coal companies with government aid to build railroads and put in machinery and employ additional labor to get out a sufficient tonnage this fall to forestall the threatened famine during the coming winter.

The Hague, Netherlands—As a result of the shortage and dearness of coal, a strict coal and coke rationing system has been established throughout the country. Despite economics, various branches of industry are being seriously hampered by lack of fuel. This factor has led to a substantial reduction of working hours in the textile industries. If the war continues, the fuel outlook for Holland is by no means a bright one.

Rio De Janeiro, Brazil—Of the 64,915 metric tons of coal imported at Rio De Janeiro during June, 1917, Consul-General A. L. M. Gottschalk reports 53,384 tons were American fuel and 6531 tons British. These figures compare as follows with the corresponding month of the two preceding years: June, 1916—total imports, 83,852 tons; American coal, 76,180 tons; British coal, 7672 tons. June, 1915—total imports, 83,296 tons; American coal, 53,629 tons; British coal, 29,667 tons.

Personals

Gilbert Mann, connected with the coal-mining company of Percy Heilner & Son, Inc., Land Title Building, Philadelphia, Penn., has been called into military service.

W. A. Cortright, Jr., connected with the Cortright Coal Co., Philadelphia, Penn., who recently enlisted in the coast-patrol service, has been promoted to quartermaster on S. P. 602.

H. M. Duff, of Pittsburgh, Penn., has resigned his position as division engineer of the United Coal Corporation (Pittsburgh Division), effective Sept. 22, to accept a position with the Clinton Coal Co., of Pittsburgh, Penn.

George W. Allan, a leading lawyer of Winnipeg, has been appointed assistant to C. A. Magrath, Canadian Fuel Controller. He will have supervision of the coal situation in Manitoba and advise the controller as to conditions in that province.

W. A. Campbell, formerly with the Stone Gap Colliery Co., Glamorgan, Va., has been made superintendent of the Norton Coal Co., Norton, Va., and took charge of the work, Sept. 25. Mr. Campbell is well known to the coal trade throughout the country.

James M. McHugh, superintendent of the Edgewater mine of the Tennessee Coal, Iron and Railroad Co., near Wylan, Ala., is spending two weeks' vacation visiting among old acquaintances in the Pittsburgh, Penn., District, where he resided before going to Alabama.

William Risden, superintendent of the Kentucky Jewel Coal Co., Hazard, Ky., has resigned his position to accept the superintendency of the Procter Coal Co., at Red Ash, Ky. Mr. Risden is well known in the Hazard field and is a mining man of considerable experience.

V. E. Sullivan, member of the House of Delegates from Raleigh County, West Virginia, has been appointed Deputy Mine Inspector for the Eleventh Mining District, headquarters at Beckley, succeeding Deputy Inspector L. B. Holliday, transferred from the Eleventh to the Thirteenth District.

Obituary

Thomas Russell, a well-known British Columbia mining man, mine manager for the Crows Nest Pass Coal Co., died at Michel, B. C., on Sept. 20.

J. W. Heck, of Milton, W. Va., was killed recently at a mine which he owned near Nelsonville, when a car on which he was entering the mine jumped the track and fell down a 30-ft. incline.

Robert L. McCormack, of Toronto, secretary of the Lehigh Conger Coal Co., in which he was largely interested, was accidently killed on Sept. 23 when the automobile in which he was riding was overturned. He was 63 years of age, and is survived by three sons and five daughters.

Recent Coal & Coke Patents

Non Attrition Process of and Apparatus for Washing and Sorting Coal. H. Adams, assignor to Adams Mining Machinery Corporation, New London, Conn., 1,224,350, May 1, 1917. Filed May 11, 1916. Serial No. 96,774.

Method of Treating Coal. C. E. Hite assignor to Universal Briquetting Co., a corporation of Delaware. 1,224,641, May 1, 1917. Filed June 21, 1909. Serial No. 50,331.

Coupling for Mine Cars. V. Willoughby, assignor to American Car and Foundry Co., St. Louis, Mo., 1,224,824, May 1, 1917. Filed Dec. 30 1915. Serial No. 69,400.

Process of and Apparatus for Treating Coal. C. H. Smith, Short Hills, N. J., 1,224,424. May 1, 1917. Filed May 5, 1916. Serial No. 95,547.

Dumping Car Door Operating Mechanism. J. M. Rohlfing, assignor to American Car and Foundry Co., St. Louis, Mo., 1,224,497, May 1, 1917. Filed Oct. 25, 1915. Serial No. 57,748.

New Publications

"Permissible Explosives Tested Prior to January 1, 1917." By Spencer P. Howell, Department of the Interior, Bureau of Mines. Technical Paper 169. Unillustrated, 19 pp., 5¾ x 9 in.

"The Home Garden in Kentucky." By C. S. Adams. Kentucky Agricultural Experiment Station, University of Kentucky, Lexington, Ky. Circular No. 14. Illustrated, 59 pp., 6 x 9 in.

"Monthly Statement of Coal-Mine Fatalities in the United States. April, 1917." Compiled by Albert H. Fay. Department of the Interior, Bureau of Mines. Unillustrated, 24 pp., 5¾ x 9 in.

"Organizing and Conducting Safety Work in Mines." By Herbert M. Wilson and James R. Fleming. Department of the Interior, Bureau of Mines. Technical Paper 103. Illustrated, 57 pp., 6 x 9 in.

"The Determination of Nitrogen in Substances Used in Explosives." By W. C. Cope and Guy B. Taylor. Department of the Interior, Bureau of Mines. Technical Paper 160. Illustrated, 46 pp., 5¾ x 9 in.

"The Economical Purchase and Use of Coal for Heating Homes with Special Reference to Conditions in Illinois." Engineering Experiment Station, University of Illinois. Circular No. 4. Illustrated, 58 pp., 6 x 9 in.

"The Geology and Mineral Resources of the Reefton Subdivision." By J. Henderson. New Zealand Department of Mines, New Zealand Geological Survey. Bulletin No. 18 (New Series). Illustrated, 232 pp., 8½ x 11 in.

"Durability of Stucco and Plaster Construction." By R. J. Wig, Engineer Physicist; J. C. Pearson, Associate Physicist, and W. E. Emley, Associate Chemist. Bureau of Standards. Technologic Paper No. 70. Illustrated, 74 pp., 7 x 10 in.

"The Primary Volatile Products of the Carbonization of Coal." (A Sequel to Bulletin 1, "The Volatile Matter of Coal.") By Guy B. Taylor and Horace C. Porter. Department of the Interior, Bureau of Mines. Technical Paper 140. Illustrated, 59 pp., 6 x 9 in.

Industrial News

Evansville, Ind.—A rushing business is being done by the municipal coal yards, opened by Mayor Benjamin Bosse. A capacity volume is being handled, it is reported, at several cents per bushel under the commercial rate.

Harrisburg, Penn.—Carrying coal westward in box-cars may soon become common, according to a ruling made recently by the Public Service Commission that box-cars could not be charged against the allotment of coal companies.

Vancouver, B. C.—Fuel Controller C. A. Magrath has fixed the price of coal here as follows: Screened delivered in sacks per ton, $8.50; screened at wharf in sacks per ton, $7.50; delivered in bulk wagonside, $8; at wharf in bulk, $7.

St. Louis, Mo.—The new weights and measures law passed by the Board of Aldermen is now in force. Commissioner Weeke has announced that retail dealers will be arrested unless their baskets are marked 80 lb. to the bushel and 40 lb. to the half bushel.

Charleston, W. Va.—Earl Henry, chief of the Department of Mines, recently issued his report for the month of August. Thirty-six fatalities is the total for the month, and of these 27 were Americans and nine were foreigners. Inside the mines 28 were killed and eight outside.

Alix, Alberta—A coal mine on Red Deer River, south of the town, is being opened up by former citizens of Oregon and local men on an extensive scale. It will give the farmers an opportunity of buying coal at low prices and a considerable portion of the output will be shipped to other points.

Allentown, Penn.—William S. Buckland, head of the National Slag Co., has announced that the company will enlarge its operations to the extent of from 3000 to 5000 tons per day. The company has installed three crushers at the cinder banks at Bethlehem, Hellertown and Hokendauqua.

Sequatchie, Tenn.—The Chicago-Tennessee Coal and Coke Co., which is reopening its mines at Waldensia, has the entire output contracted for, to be made into coke. The present battery of sixty ovens is being repaired and a second battery to duplicate it will be established later.

Scranton, Penn.—Judge E. C. Newcomb recently made an order granting a preliminary injunction to J. W. Kirby, of Olyphant, restraining the Olyphant Coal Co. from operating its breaker on a tract of land owned by the plaintiff, and also from removing culm from a dump on the plot.

St. Louis, Mo.—The railroads of Illinois have withdrawn their application to the State Public Utilities Commission for a reduction of free time in the loading and unloading of open top cars from 48 hours to 24 hours and for the elimination of free time in the reconsignment of open top cars.

Frankfort, Ky.—The State Board of Prison Commissioners has let a contract to the Greenville Coal Co. for the year's supply at the Eddyville, Ky., penitentiary. It will be furnished at an average price of $1.80 a ton, between the Government maximum of $1.95 for mine-run and $1.70 for slack.

Columbus, Ohio—James B. Dugan, chief inspector of the Ohio Utilities Commission, announces that during the past few weeks a large tonnage of slack, which was held at Lake Erie ports and was unfit for shipment to the Northwest, has been released for the use of steam plants in the northern part of the state.

Frankfort, Ky.—Out of a total of 154 new corporations organized since June 30 last, the end of the fiscal year, 55 of the new Kentucky corporations are those of coal-mining companies, and 25 have been organized to drill for oil or deal in leases. The 55 coal operations represent a capitalization of $1,209,950.

Gallipolis, Ohio—The Mason Coal and Chemical Co., a new $5,000,000 corporation of West Virginia, of which A. D. Williams, of Morgantown, W. Va., is president, recently purchased the Hartford City Salt Works and 25,000 acres of coal land adjoining. The new company will rebuild the plant and develop the coal land.

New York, N. Y.—The Patterson-Kelley Co., Inc., water-heating engineers and manufacturers of heaters, is the title under which the recently combined firms of Frank L. Patterson & Co. and Benjamin F. Kelley & Son will conduct business in the future. The address of the new consolidation is at 26 Cortland St., New York City.

Louisville, Ky.—H. M. Byllesby & Co., owning the Louisville Gas and Electric Co., have withdrawn their application presented the city authorities asking that an increase in rates on gas be approved in case of a shortage of natural gas this winter and the necessity that the company manufacture gas to mix with the natural-gas supply.

Allentown, Penn.—The Lehigh Coal and Navigation Co. has several barges at work in the Lehigh River and canal between Mauch Chunk and here, reclaiming coal, and a small breaker has been erected at Weissport to prepare the coal to various sizes. It is estimated that about a quarter of a million tons can be salvaged from the water.

Pottsville, Penn.—The operators of the Myrtle Coal Co., which is developing individual coal properties on the northern side of Sharp Mountain, have progressed to such a point that coal shipments will begin soon. The taking out of coal from the Sharp Mountain ceased more than 25 years ago, until the present company leased the territory and started work.

Homestead, Penn.—The Homestead Valve Manufacturing Co. has almost completed the rebuilding of its manufacturing plant and office buildings, whereby it added about 75 per cent. additional space to take care of the increase in its business. Additional new machinery and equipment will now make it possible for the company to take care of rush orders promptly.

Wilkes-Barre, Penn.—The shipments of anthracite coal for the month of August, as reported to the anthracite bureau of information, amounted to 7,013,996 tons, the second time in the history of anthracite mining that the shipments in any one month exceeded 7,000,000 tons. The August figures are within 35,041 tons of the high-water mark made in June of this year.

Columbus, Ohio—Another crowd of Federal accountants have appeared in Columbus for the purpose of checking the books of all retailers. The delegation is in charge of William J. Hoover, Federal accountant. He claims the purpose is to ascertain about shipments of coal to retailers and to check up costs with a view of fixing retail prices.

Washington, Penn.—The Pittsburgh Coal Co. recently increased its holdings in Washington County by 324 acres, purchasing at a cost of $330 per acre, the coal deposits in this territory from J. W. Emery, of Washington. The land is located in Amwell Township and is known as the F. M. Curry farm. The Pittsburgh Coal Co. now has 6300 acres of virgin coal in this district.

Washington, D. C.—The increase from 5 to 6c. in the charge per net ton for transferring Lake cargo coal from cars to vessels at Toledo, Ohio, proposed by the Toledo & Ohio Central Railway Co., and a similar increase proposed by the New York Central R.R. (lines west) for transfer to vessels at Ashtabula Harbor, Ohio, have been approved by the Interstate Commerce Commission.

Louisville, Ky.—The Consumers Fuel and Supplies Co., capitalized at $5000, has been incorporated in Louisville by S. C. Dalrymple, W. S. Adams, N. C. Boling and Elinor Morris. The debt limit of the company is fixed at $200,000 and it is the purpose to purchase coal in large quantities to be supplied to the owners and managers of large hotels, office buildings, apartment houses, etc.

Fairmont, W. Va.—According to a report from D. R. Lawson, secretary of the Central West Virginia Coal Operators' Association, mines in this section are suffering severely from lack of cars, 73 mines with a total capacity of 178,000 tons, loading only 93,800 tons in the first week in September. Many mines, Mr. Lawson said, are shut down three or four consecutive days a week on account of lack of cars.

Toledo, Ohio—The Toledo docks of the Hocking Valley Ry., for the week ending Sept. 21, loaded 180,000 tons as compared with 212,000 tons the previous week. The total handled since the opening of navigation is 3,155,876 tons. The Toledo & Ohio Central docks during the same week handled 114,000 tons, as compared with 106,000 tons the previous week. The total loaded by these docks for the season is 1,523,699 tons.

Reading, Penn.—Ex-Congressman Henry D. Green, of Reading, on behalf of himself and other stockholders and creditors of the Laurel Hill Valley Coal and Coke Co., has secured an injunction against the Laurel Hill Lumber Co., of Bowers, and the Laurel Hill Valley Coal and Coke Co., of Reading, to prevent a transfer of 1177 acres of coal land in Somerset County, now the property of the coal company, to the lumber company.

Columbus, Ohio—The announcement is made that for the time being at least there is no danger of a fuel famine in the Buckeye State. The Ohio Clearing House during the past week has supplied tonnage to plants and retailers where the need was urgent. In only a few cases have plants been compelled to suspend operations because of lack of fuel. More coal is now being released from the Lake trade to supply the domestic trade throughout the state.

Washington, D. C.—The production of coal in Utah in 1916 was 3,567,428 net tons, valued at $5,795,944, an increase, compared with 1915, of about 459,000 tons, or 15 per cent. in quantity, and of $879,000, or 18 per cent. in value. The output in 1916, according to C. E. Lesher, of the United States Geological Survey, department of the interior, was the greatest on record for the State of Utah and exceeds that of 1913, the previous record year, by more than 213,500 tons.

Jackson, Ky.—Capt. A. C. Rhinehard and others, of Perry County, recently purchased 10,000 acres of coal lands lying along the Troublesome Fork of the Kentucky River in Breathitt and Perry Counties, and make the announcement that active development work will soon be undertaken upon most of the property. This will also mean the construction of a 20-mile branch line of the Louisville & Nashville R.R., and the building of at least two new towns.

Alton, Ill.—The City of Alton will readvertise for bids for supplying coal for the winter. A misunderstanding is the cause. When bids were received some time ago the contract was awarded to the J. T. Welsh Co. at 14⅜c. per bushel. The understanding of the city officials was that the price was to apply all winter. The company's understanding was that it applied only to the first filling of the bins. It has also been found that the Welch company will not furnish 6-in. lump. The Midland Coal and Supply Co. bid 17c. on 6-in. lump.

Washington, D. C.—In order to increase the number of sources of material for the manufacture of nitrates the recommendation has been made by the officers of the War Department in charge of the proposed nitrate plant that encouragement may be given the byproduct coke industry. For the purpose of increasing the production of ammonia and toluol it is suggested that the Government promote the installation of byproduct coke ovens by directing that priority be given in the production, delivery, and transportation of the materials and parts needed in their construction.

Belleville, Ill.—The Rentchler Mine, owned by the Missouri & Illinois Coal Co., is now being operated under the name of the White & Sergent Coal Co. The following changes of company names in St. Clair County have been reported to County Inspector Jakoubek: Dozaw Coal Co. to Forsyth Coal Co., Dozaw Valley Mine; Fischer Fuel Co. to St. Ellen Coal Co., St. Ellen Mine; Missouri & Illinois Coal Co. to W. S. Scott Coal Co., Wilderman Mine; Enterprise Coal Co. to Enterprise Collieries Co., Enterprise Mine; Reeb Coal Co. to Radium Coal Co., Murphy Mine.

Columbus, Ohio—As a result of an embargo by the Cincinnati, Hamilton & Dayton R.R. against the Jackson coal field, operators in that section may be forced to shut down shortly, according to James Dugan, chief inspector for the Ohio Utilities Commission. The railroad has declared the embargo as a result of an order from the Council of National Defense to accept 100 cars of coal a day from the L. & N. and 350 cars a day from the C. & O., to be hauled to Toledo for Lake shipment. The railroad declared that this amount of traffic would tax its capacity and declared an embargo on all shipments north of Dayton.

Collinsville, Ill.—Madison County surpassed all previous records in coal production in the fiscal year ending June 30, according to the annual report of J. J. Fletcher, county mine inspector. The production was 5,043,723 tons, an increase of 20 per cent. over the preceding year. There are 15 shipping and 11 local mines. They employed during the year 4243 men, an increase of 536 men over the preceding year. Fourteen men were killed and 133 injured during the year. The New Staunton Coal Co. made the best record, hoisting 5286 tons in a day. The Abby Coal Co. increased its capacity to 300 tons and became a shipping mine. Every mine in the county is in operation and three abandoned mines have been reopened.

Market Department

GENERAL REVIEW

Four salient facts mark this week's market news. The movement of anthracite is steady; with many consumers in desperate need, supplies of spot bituminous are not to be had; the coke price has been fixed at a figure approximately one-half above the fixed price of coal; a readjustment of the coal price is imperative.

Anthracite—The movement of anthracite is in the main fairly regular and continuous. Water shipments to New England are falling off somewhat, but production is not materially decreased. In and around New York domestic coals are scarce, but the prospect for a better supply is promising. Some companies have discontinued retailing. The car supply which in certain districts in the bituminous field showed a marked diminution was somewhat less throughout the anthracite region. Considerable quantities of this fuel are, however, moving up Lake to the Northwest. While a scarcity of this fuel is reported from many districts, it is believed that a larger supply than usual has been stored in the cellars of the ultimate consumers. On account of the increasing scarcity of bituminous coal the steam sizes of anthracite are in strong demand. Prices, however, are held rigidly to circular, while in many districts the prospective regulation of retail prices is placing a damper upon the domestic demand. This, however, has been in large measure offset by cool weather.

Bituminous—The bituminous situation is in a critical condition, which is rapidly merging upon a desperate one. Mills, factories, industrial and municipal plants everywhere, unless their needs are covered by contracts made prior to price-fixing by the Government, are in short supply of fuel. Many are unable to run except by borrowing coal from their more fortunate neighbors. Some plants are down to a supply scarcely in excess of twenty-four hours' requirements. Such conditions have seldom, if ever, been known before. Many consumers of fuel are willing and anxious to pay prices much above those established by the Government. Producers, mining coal which costs them f.o.b. cars, slightly more than the Government schedule, are anxious to dispose of this fuel at a price which will not net them a loss, but these two elements are unable to get together and do business because of the edict from Washington, which forbids transactions other than on the Government basis. The price for coke was recently fixed at $6 per ton. Allowing for the shrinkage in coal used in coke manufacture, and the labor and other expenses entailed, this would represent a price for the coal of approximately $3 per ton at the mine mouth. Such a price, if allowed to the producers of coal, would go far toward relieving the present shortage of bituminous. The conditions over the entire country are such that unless price readjustments are made soon the result will be disastrous and far-reaching. It is confidently believed that such readjustments will shortly be made.

Lake Trade—The movement of coal by Lake, particularly bituminous, received a decided check during the past week. This was occasioned chiefly by a lack of sufficient cars at the mines.

Middle Western—Labor at the mines is scarce, indifferent, and inefficient, while car supplies are inadequate. Practically all mines throughout the Indiana and Illinois fields are oversold, and cannot more than meet their contract requirements. Buyers are scurrying about in a desperate endeavor to meet their immediate fuel needs. The priority shipping order has cut off a large portion of the supply of Eastern coals from the Middle West territory, Chicago in particular. Critical conditions are facing the territory west of the Mississippi and particularly that south of the Missouri River.

A Year Ago—Heavy demand for anthracite. Bituminous situation hinging on the car supply. Shortage of coal for Lake shipments. Increasing demand in the Middle West.

COAL PRODUCTION

Observance of Labor Day as a holiday in some districts and not in others renders it difficult to interpret the course of the ratio of tonnage produced to full-time capacity during the week ended Sept. 8. In computing the ratio the full-time capacity of mines observing the holiday has been calculated on a five-day basis; that of mines working the entire week on a basis of six days. The index thus obtained is 74.8 for mines reporting since the beginning of the weekly reports, as compared with 72.0, the figure for the preceding week. The recovery from the depression of mid-August is apparently continuing, although it will be noted that the index, depressed by the strikes in eastern Kentucky and Tennessee, is still below the level of July.

PERCENTAGE OF PRESENT FULL-TIME OUTPUT PRODUCED IN WEEK ENDED

State	Aug. 11	Aug. 18	Aug. 25	Sept. 1	Sept. 8
Iowa	82.6	85.3	86.3	81.4	79.4
Illinois	70.3	54.8	69.3	76.0	76.5
Indiana	63.2	71.8	69.3	72.9	74.9
Ohio	70.2	73.2	68.6	68.6	80.6
Western Pa.	78.2	69.4	75.2	76.9	81.9
Winding Gulf region					
West Virginia	77.1	83.0	88.7	87.8	74.7
Southwestern Va.	94.0	93.9	94.1	91.7	96.0
Eastern Kentucky and Tennessee	74.2	10.8	4.7	10.8	10.8
Alabama	88.8	85.9	86.1	83.6	82.2
Kansas and Missouri	64.9	72.2	76.2	79.4	79.2
Okla. and Arkansas	66.0	65.5	70.0	63.0	72.1
Total reporting from beginning	71.8	62.5	68.5	72.0	74.8

Coal originated by 17 of the principal bituminous carriers amounted to 111,874 cars in the week ended Sept. 5. This figure is higher by 2000 cars than any other attained by these roads since July. The greatest increase was in Pennsylvania and Ohio, a fact which corroborates the inference drawn from the reports of the operators—that the priority order on Lake shipments is having its effect. Reports of cars loaded on 90 roads, including the 17 large roads shown in the accompanying table, in the week ended Sept. 15 show a gain of but 0.5 per cent. over the week ended Sept. 1, compared with a gain of 2.6 per cent. for the 17 roads. This fact indicates that the improvement is local and largely in the districts affected by the priority order on Lake business. In other districts production has decreased, and the situation in the country as a whole has shown no improvement.

CARLOADS OF COAL ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS

District	Week Ended Aug. 25	Sept. 1	Sept. 8	Sept. 15
Ala., E. Ky. and E. Tenn.	5,368	5,545	5,471*	5,793
Ill., Ind. and West Ky.	22,423	22,329	19,459*	22,936
Pa., and Ohio	47,058	47,622	42,244*	48,723
W. Va. and Va.				
Smokeless	14,021	13,549	11,856*	13,879
High volatile	18,799	18,055	18,678*	18,490
West of the Mississippi	1,762	1,923	1,664	2,053
Total	109,431	109,023	99,372*	111,874

* Revised from last report.

BUSINESS OPINIONS

The Iron Age—Since the announcement on Monday of the prices agreed upon by the Government and leading steel producers the trade has been in utter confusion. Surprise that the prices were agreed upon rather than imposed by the Government was followed by excited efforts to get details which thus far are lacking, and meanwhile business practically stopped. Coke producers have started off promptly to establish the $6 basis. On two contracts which call for the fixing of the price according to the market from day to day, shipments of furnace coke have already been made at $6. However, the coke trade is well booked ahead and there will be no large amount of $6 coke available for some time. Only recently long time contracts were entered into at $8.50 and these are expected to be carried out. The raising of the Government price on coal is pointed to by the $6 price for coke and by the fairness of the agreements on copper and steel and $2.50 and $2.75 are suggested prices, a new argument for the advance being furnished by the extravagant demands of the bituminous miners.

Dun—The gain in business with the advancing season is not yet general or uniform, and rather less of it is seen in the East than at other points. Where none at all appears, or where there is some actual recession, it is plainly due more to uncertainty than to lack of confidence in the future. At bottom, business in various branches has hesitated because the outlook has been and still is more or less clouded, and the tendency to act with caution in anticipating forward wants grows in many quarters. But while the present policy of conservative purchasing, and more largely for immediate and certain needs, contrasts sharply with last year's rush to contract far ahead at almost any figure, and is disappointing to some interests, it is one which clearly makes for more wholesome conditions and more stable progress.

Bradstreet—While cross currents born of uncertainties regarding the effects of governmental price-fixing, economizing by consumers and widespread labor troubles, run through the general situation, the broad swing of trade is in the direction of further expansion. House trade in the standard staples has increased, distribution by retail dealers is better, buying of holiday goods is already noted, news respecting the remaining unharvested crops is favorable, money is in active demand, collections range from fair to good, and industry is brisk, being only hampered by insufficient supplies of labor and limited deliveries of raw materials. On the other hand, the labor situation is disconcerting, strikes are numerous, especially on the Pacific coast; the draft has made further inroads on the supply of help, and wages keep on rising.

Marshall Field & Co.—Current wholesale distribution of dry goods shows a large increase over the same week of a year ago. Road sales for both immediate and future delivery surpass the volume of last year by a considerable margin. Merchants have been in the market in smaller numbers. Collections are much in excess of the corresponding period of 1916.

Dry Goods Economist—Following up the unusually good start which the fall season has had with retailers as the result of exceptionally cold weather, the trade has continued to move with considerable activity.

Atlantic Seaboard

BOSTON

Practically no developments. Spot coal conspicuous by its absence in most directions. Hampton Roads coals unchanged, all receipts being applied on contracts. Rumors are circulated that $2.85@3 will be the net ton basis Oct. 1, but these lack confirmation. "Wagon mines" the only operations heard from on open market. Anthracite shipments sag again.

Bituminous—The deadlock continues, and as the weeks go without any modification of the President's order of Aug. 21, there is increased anxiety throughout this territory. Those consumers who made ample purchases in June and July are not worrying much, for their supplies are coming through on schedule.

The concerns who rehandle coal at their own wharves for inland delivery from ports like Providence and Boston are about the only coal factors now in position to make spot sales. The rate of water freight is so uneven in different instances that the authorities have not yet reached a de-

cision on this branch of the trade. Retail dealers, however, who are dependent upon the same kind of water transportation are much concerned over the possibility that they will be held to a maximum price for retail deliveries, based upon a minimum rate of water freight. They still have coal on which up to $5 per ton freight from Hampton Roads may have been paid, and if on Oct. 1 they are required to sell consumers at prices based on what water freights may be, under most favorable conditions, the outcome will be serious. Boston dealers continue to sell at $8.75 per net ton for sidewalk delivery, and rehandlers are charging $8.50@8.75 per gross ton, f.o.b. cars. Quite an extra tonnage has been placed at the latter price with fairly large mills that are in distress for spot fuel.

Pocahontas and New River tonnages from Hampton Roads are so strictly confined to contract business that dumpings over the piers show a marked decrease. An occasional buyer seeking cargo for his ship finds it next to impossible to make purchases. Only when compelled to free cars will the smaller agencies accept the Government basis from parties in the open market, and all the larger factors are so well supplied with orders that the current situation gives them little anxiety.

Certain shippers of the Pennsylvania coals have been offering freely on a basis of $3.15@3.30 per net ton, f.o.b. mines for prompt shipment. It develops that a ruling was secured from the Fuel Administration authorizing mines that have no direct rail connection to charge $1 per net ton for teaming to the cars.

Well-defined rumors have persisted the last few days with regard to a scaling up of the authorized price, particularly on the coals originating in central Pennsylvania. Two dollars and eighty-five cents to $3 has been "mentioned" as a possible basis per net ton, but no one will vouch for the authenticity of the rumor. What effect such a price would have is conjectural, but at least it would remove the objection of a large number of operators that $2 per net ton is not a "living return."

All-rail movement has improved slightly, and embargoes are less frequent. Car-supply, however, is still inadequate, and the labor problem gets more and more complicated. The same situation that makes it difficult to get coal properly prepared at the mines has a bearing on the treatment of fuel in the fire-room. Factories get poorly prepared coal and their boiler crews leave because of the extra labor involved.

One recent development is of special interest. To local dealers who have furnished bituminous of specified grades in other years to Government buildings and who are now unable to get the coal to sell, the Fuel Administration is raising the question with the various sources of supply in the effort to get emergency shipments on the authorized price, subject to whatever adjustment may later be made by the Government. The outcome of these efforts is likely to have a salutary effect on the whole situation.

Anthracite—Water shipments from Philadelphia and from New York are again falling off, due partly to unfavorable weather affecting barge movement and partly to light receipts at the piers. Retail demand is increasing by leaps and bounds, and all the householders who accepted the statement that coal would be cheaper in the fall are making it hard for the dealers.

Local distributors all over New England have been asked for memoranda of their costs, and the anxiety over what the retail price is to be after the Fuel Administration rules upon it has a discouraging effect on buying supplies outside of the regular companies. A dealer who is required to pay $3@4 water freight from New York for transportation in the open market is naturally in a delicate position.

As a result of the hearing on Sept. 18 with regard to the pooling of coastwise tugs and barges a committee of five was appointed to confer with representatives of the Federal Shipping Board and the New England Coal Committee. This body is representative and can be expected to act in a broad-minded way.

NEW YORK

Anthracite moving steadily but domestic coals are scarce. The prospects for better supply are bright but labor may interfere. Some companies discontinue retailing. Cars are slow. Employers and workers in central Pennsylvania discouraged because of conditions, but operators see some hope in the new price for coke. Sales of $2 coal few. Industrial plants complain of shortage.

Anthracite—The market so far as it relates to domestic coals is moving steadily along, all sellers adhering strictly to the prices fixed by the President. The steam sizes are freer due to greater supply, while the scarcity of bituminous tends to keep the prices up.

The prospects of a larger supply of domestic coals in the near future are encouraging now that the sending of coal into Canada has been curtailed and also because some of the companies will, so far as possible, keep their cars on their own lines or nearby connections.

Labor conditions in the mining fields are serious, according to information received here. Most operators are losing workers daily, owing to the draft or to the call from other industries. In some instances miners do their own loading because of their inability to secure laborers. In some mines the men are working nearly full time, with the result that their pay checks are larger than in many months.

Production, while heavy, is being continually interrupted by outings, flag-raisings and the like.

Demand on the big selling companies has become so strong that some of them that heretofore have taken care of retail demands in certain towns in the mining fields, have discontinued that end of the business which hereafter will be looked after by individual operators.

Cars are not moving freely and labor troubles in some of the car shops have increased the shortage because of the inability to make necessary repairs.

Independent operators are finding an easy market for their product in the North and West, with the result that outside of contract requirements, Tidewater points are receiving little of their output. The wholesale dealer without mine connections feels most keenly the failure to secure coal sufficient to take care of his regular customers, who are compelled to seek supplies from other sources.

Chestnut coal is freer than either egg or stove, but all receipts are easily taken care of. Pea coal is scarce.

The cheaper grades of the steam coals are plentiful while the better grades are hard to obtain. The continued heavy call for these coals is accounted for by the lack of bituminous.

Retail dealers are anxious to fill their bins but are having difficulty in obtaining supplies. Some yards are without stove and with but little egg, but there is plenty of chestnut. In Manhattan the retail prices are $8 for broken and egg; $8.25 for stove and chestnut, and $7 for pea, labor charges for putting the coal away to be added. Retail prices in Brooklyn are 50c. higher but labor charges are included.

Current quotations, per gross ton, f.o.b. Tidewater, at the lower ports, are as follows:

	Circular	Individual
Broken	$5.95	$6.70
Egg	5.85	6.60
Stove	6.10	6.85
Chestnut	6.20	6.95
Pea	5.30	6.05
Buck	3.95@4.65	5.00@5.30
Rice	3.40@3.60	3.25@3.70
Barley	2.90@3.15	2.25@2.50
Boiler	3.15@3.30	.....

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—The failure of the Government officials to grant any advance over the $2 price has not caused any change in local conditions. The trade is stagnant. Production is gradually decreasing according to Government statistics, and there is a greater shortage among public utilities and factories, which are usually well provided with coal.

There is much dissatisfaction in the mining regions over conditions. The operators are discouraged with the $2 price, which prevents many of them from operating their mines except at a loss; there is also the car shortage. The mine worker feels that with the necessaries of life costing more he should be enabled to work steadier, instead of being sent home from the mine because of the failure of the railroad to place cars. They point out that while they make good money when at work, the average for the week is below that earned by men in other industries. It is because of these conditions, it is said, that mine employees are seeking employment in other industries. The fixing of $6 per net ton as the price for coke leads some operators to believe that a new price will be decided upon for bituminous shortly.

Sales of coal at $2 are occasional occurrences and only take place when some operator or shipper wants to save demurrage charges. Most operators are taking care of contracts made prior to the fixing of the new price with the result that $2 coal is as hard to find at Tidewater as a needle in a haystack.

With exports curtailed the hope is expressed that operators will send more coal here, otherwise it is feared there will be a general closing down of industrial plants some of which are now running on a day's supply.

PHILADELPHIA

Anthracite stocks low as month closes. Light shipments last week. Tonnage carefully alloted. Car supply fair. Hope of lower prices holds off some retail business. Differing wholesale prices annoy retailers. Bituminous trade still awaits new prices. Production behind demand. Contract customers stocking fuel.

Anthracite—The month of September is closing with probably less coal in the dealers' yards than during any early fall for many years. Another week of light shipments, particularly by the big companies after promises had been made of improvement, has only served to accentuate the present acute conditions. It is possible that the individuals are shipping more prepared sizes to this market just now than some of the large operators. The retailers in their anxiety to secure coal are willingly offering the premium of 75c. to the smaller operators who mine their own coal, or 95c. to the brokers, but in many instances their orders are refused.

Never in the history of the big mining companies has their tonnage been so carefully distributed. Haphazard shipping has been entirely eliminated and every car consigned has been arranged for long in advance. Complete record of every shipment is being kept and comparative statements of each consignee's business for the past few years is tabulated. There can be no denying that a strong demand for coal exists, especially since September hereabouts has been one of the coldest months on record and the domestic consumption has been much greater than usual.

The car situation sometimes brings confusion, but these conditions are unavoidable. We are led to believe that the anthracite trade, while suffering at times quite severely from car shortage, is actually receiving better attention than almost any other industry at this time.

The past week brought little new business to the retailers, as the late buyers seem to think that with the present high prices they have nothing to lose by waiting a little longer. The newspapers have led them to believe there will be a reduction on the first of the month on account of rumored standard prices to be fixed. The retailers seem sure of their ground and apparently do not believe that the authorities in Washington will ask them to reduce their rates unless the shippers are compelled to reduce theirs. The feeling is growing that the wholesale prices at the mines will be reduced. If this is expected of any size it is pea coal. No one seems to understand why all the shippers were allowed to make such a substantial increase in the price of this now popular size.

The prices per gross ton, f.o.b. cars at mines for line shipments and f.o.b. Port Richmond for Tide, are as follows:

	Line	Tide		Line	Tide
Broken	$4 55	$5.70	Buck	$2 90	3 30
Egg	4 45	5.75	Rice	2 40	3.40
Stove	4 70	6 00	Boiler	2 20	3.30
Nut	4 80	6.05	Barley	1.90	2.15
Pea	4 00	4.90			

Bituminous—With new prices momentarily expected the trade continues to be on edge. It was fully believed a week ago the Government would ere this have issued instructions for a new price basis, but it now looks that nothing will happen in this direction until the first of October.

Shipments into the city have shown no appreciable increase of late and while the mining interests have endeavored right along to reach their maximum production they have been unable to do so on account of the continued poor car supply, which in some cases has been as low as 22 per cent. and if it had not been for railroad supply orders suspension at the mines would have been necessary.

The sales of coal at the Government figure of $2 are mighty scarce and there certainly have not been sales of more than 10,000 tons all told in this territory at that figure. These sales are usually made by an occasional shipper whose contract orders being filled found himself with a few free cars on his hands.

There can be no doubt of the demand for coal in this market, although the large plants such as the public utilities, etc., are accumulating good stocks on account of the contracts which they made earlier in the season and quite a number of them are reported to have almost 60 days' supplies

ahead of them. However, it is the smaller plants, those who were unable to make contracts, who are the real sufferers at this time and some of them are in a serious condition and are offering fancy prices for fuel but with no takers of their offers.

BALTIMORE

Coal situation becoming more and more serious and consumers begging for change. Production grows less day by day. Rail movement poor.

Bituminous—With coal production growing admittedly less day by day, with rail deliveries of the most unsatisfactory character under the stress of troop and war-material movements, embargoes, etc., and with industries in many cases so short of fuel that they are begging Washington for relief in the shape of coal at any reasonable price, the situation here is truly serious. The closing down of many mining operations is giving concrete proof that coal cannot always be produced at $2 or $2.15. The Clarksburg district alone reports some 25 operations closed there, and from Somerset, Fairmont and other points come similar reports of closings.

The little mines are being squeezed out and even the big ones are in many instances "wobbly" and are not supplying the tonnage deficiency. As a matter of fact, all are far behind the contract obligations that are most urgent and there is no spot market at all. The situation here is so tense that some industries have been kept going by borrowing fuel.

Meanwhile the fuel administration has flooded coal men with what are practically orders to fill this or that urgent fuel need, the action being based on the assumption that as the coal firm had held the contract the year previous it should again care for the customer. How many such orders are being filled is a question, but many are being disregarded, undoubtedly, as the coal men have no $2 coal to put out even for such urgent cause. A transfer would mean the robbing of Peter to pay Paul, and as Peter has a good contract at a fair price the coal man cannot figure why he should give Paul the coal at a poor price, even at Government behest.

The City of Baltimore has been promised coal by Mr. Snead, in Washington, at least sufficient to run its water, sewerage and fire departments, but other sections, such as schools, are left to hustle for outside coal that at present is not to be had. The visible supply at Tide has been hard hit. There are few days when the amount on hand runs up to 20,000 tons, all on contracts, whereas the normal supply should run fully three times as much. Coal men are being begged for coal at any price and not only do they decline spot business but cannot get through contract coal because of poor rail movement. Many mining districts saw days at a time last week when they did not get a single empty. Lack of miners is cutting deeper all the time, also. Laborers in this city are so scarce that the city, short on coal, had to let ten cars of anthracite lie untouched for ten days before a force could be secured with which to unload them.

Anthracite—The hard-coal situation also is perplexing. With cool weather here that has sent everybody scurrying to find out why their summer orders have not been delivered, the retail coal men have been swamped with complaints. No one wants to accept the statement that there is no coal coming through to distribute, and many fuel men here are having sleepless nights because they cannot take care of even their old customers. The September schedule is in force pending new rate announcements from Washington, but there is mighty little fuel to distribute at those figures.

COASTWISE FREIGHTS

Charters from Hampton Roads to Boston are practically confined to barges owned by coal interests that are unable themselves to load the transportation. Rates continue on a $2.50 basis, but quotations are only occasional.

Barges for Long Island Sound ports and schooners for Eastern trade are in good supply for New York loading, but coal is so hard to secure that few charters are made. One dollar and twenty-five cents is still the rate to Providence, with 10@15c. more for New Bedford.

Lake Markets

PITTSBURGH

Prospects of agreement on higher price basis. Market transactions light.

At this writing (Tuesday) the coal men are assembled in Washington for the purpose of meeting representatives of the Government and straightening out the tangle that seems to have developed from the fixing of the $2 coal price. If this agreement between the coal producers and the Government's representatives is of the same order as that between the iron and steel producers and the Government representatives at last Friday's conference an amicable arrangement will be reached, with a coal price not under $2.50 nor over $3, and an announcement to that effect will be made, perhaps at once and possibly not until after several days. The Washington authorities have complete jurisdiction over both coal and coke prices, through the Lever act, and can fix these figures without consulting the producers. In the case of pig iron and steel an agreement was necessary as they have absolute authority only in the case of material the Government buys for its own use. Nevertheless the coke price of $6 was arrived at practically by agreement and the same procedure may occur with coal.

Market transactions continue to be negligible, there being scarcely any coal offered on the $2 basis. There are some sales, however, a few jobbers reporting transactions at $2.15, this including their margin. Production is somewhat restricted, it is stated, through operators not being in financial position to pay men bonuses for extra work. We quote slack at $1.75@1.90, mine-run at $2@2.15 and screened at $2.25@2.40, per net ton at mine, Pittsburgh district.

BUFFALO

No relief from bituminous prices promised. Coal running short in various towns. Buffalo shippers waiting for coal to move. Anthracite going fast by Lake; very scarce in the city trade.

Bituminous—The shippers in this trade are still doing no new business and are all anxiously inquiring what is to be done to relieve the stress of the situation. They claim that they can get no coal at the regulation prices and that much of the amount they have contracted at higher prices has been ordered into the Lake trade, so they are handicapped in all directions. They have been saying ever since the $2 price was established that there would have to be an advance, but it does not seem to be any nearer than it was when the price was first established.

The Government will not yield. When shippers or towns ask how they are to get a supply the question comes back as to who used to supply them and at what prices. The idea seems to be to oblige such mines to produce the coal, required. Several towns in this vicinity are short of bituminous with which to run waterworks and the like. In one case a promise to provide relief has been made, but it does not appear that any steps have been taken in that direction. There is no effort to break over the rule. Everybody is waiting for developments.

Bituminous prices are nominally without change. Special efforts on the part of shippers who have cannel, smokeless and other special varieties to sell, have failed to obtain permits to charge prices by which they can be handled. Quotations are per net ton, f.o.b. Buffalo, all differences being made by the variation in rail rate:

	Slack	Lump
Pittsburgh	$3.30	$3.80
Bessmer	3.25	3.75
Allegheny Valley	3.15	3.65

Anthracite—The ordering of so much coal to the Lakes, which it now appears was made to apply to all coal, has cut off the supply locally, so that the retailers are doing next to nothing. At the same time it leaks out that many consumers have laid in heavy supplies, often buying two years' stores. The state of things applies both in Buffalo and Canada. Especially have independent jobbers contributed to this condition of things. With many Canadian retailers thronging the city shipping offices, teasing for coal, the reports are that both anthracite and bituminous, is stocked in the fields when all other storage room has given out.

Lake shipments are still heavy. No report of Canadian shipment is now obtainable, but it is said that they have been so heavy that the Government has cut them down and will now require a license to be taken out by every shipper to that territory. Domestic shipments are now confined almost entirely to the large receiving ports, as if the others were supplied. For the week the amount loaded was 123,400 net tons, of which 58,400 tons cleared for Duluth and Superior, 31,200 tons for Chicago, 32,200 tons for Milwaukee and 1600 tons for Green Bay. Freight rates are strong and tonnage scarce at 45 cents to Duluth, 50 cents to Milwaukee, 60 cents to Chicago and 75 cents to Green Bay.

CLEVELAND

Receipts of Lake coal greatly decreased. Many industrial and municipal plants on verge of shutting down. Domestic users holding off for reduced prices.

Receipts of coal at Lake Erie loading ports the past week decreased about 50 per cent., as compared with the week ending Sept. 15, which was the largest week of the present season. In fact, the receipts were so small that a number of coal-carrying vessels were compelled to shift from port to port in order to get a full cargo, and several were forced to go up light on account of the shortage of coal.

The local situation did not improve to any great extent and several meetings were held by members of the Cleveland Chamber of Commerce and Ohio operators with a view of increasing shipmnets to the Cleveland market, as a great many industrial, as well as some of the municipal plants, have been on the verge of shutting down for the lack of coal. The operators claim, and produced evidence to substantiate their statements, that the shortage of cars at the mines and the lack of motive power after they have been loaded, is the primary cause of the coal shortage. Another meeting is to be held at Cleveland on Sept. 27, when traffic officials of all railroads entering Cleveland will be given an opportunity to suggest some plan whereby the local situation may be improved.

The edict issued by Doctor Garfield that there will be plenty of coal at reduced prices after Oct. 1 has greatly decreased the business of the retail dealers, as the domestic users are holding off anticipating the reduction.

Some orders have been taken by eastern Ohio operators at prices fixed by the Government, namely: $1.75 for slack; $2 for mine-run, and $2.25 for ¾ lump, all per net ton, f.o.b. cars the mine.

TOLEDO

Old contracts for fuel are, for the most part, at an end, and no new ones are being made by local coal men. Demand for coal increasing, while car situation becomes more perplexing.

Every user of coal is trying his best to place orders for immediate delivery. But it appears no wholesaler here is equipped to handle orders under 60 to 90 days' delivery. A few cars manage to find their way into the city each week, but in every instance this stock has been ordered a long time ahead.

Steam trade is hardest hit of any department of the business, and many factories have petitioned the Government to aid them in securing a supply of fuel. The shortage of coal for Toledo manufacturing plants is extremely serious with little prospects of immediate relief. All endeavors to renew contracts for steam coal at present prices are to no avail, as operators assert with shipping facilities in worse condition than ever, and labor troubles at the mines imminent, they cannot bind themselves to deliver any specific amount of coal at a certain time.

Only a small quantity of anthracite is finding its way into the local market. The efforts of retailers to secure a more liberal supply are meeting with indifferent success. Most dealers, however, feel the wants of the city will be as well taken care of this year as in the past, and a well-defined feeling of confidence pervades the retail trade.

Prices per ton, f.o.b. mines, are as follows:

	Mine-Run	Lump and Egg	Nut and Slack
Hocking and Pomeroy.	$2.00@2.35	$2.25@2.60	$1.75@2.10
Kentucky..	1.95@2.40	2.30@2.65	1.70@2.15
Pocohontas.	2.00	2.25	1.75
West Virginia splint....	2.00	2.25	1.75

DETROIT

Receipts of bituminous coal are practically limited to shipments under contract. Anthracite movement is light. Lake shipments are again reduced.

Bituminous—Demand continues active from consumers of steam coal. Jobbers and wholesalers, though quoting the prices approved by the Government, say they find it impossible to secure coal to fill orders for current delivery. Efforts of producers, they assert, are being concentrated on getting out a sufficient supply of coal to fill the orders represented by contracts on their books previous to the Government price arrangement.

The deficiency in car supply, it is explained, is materially restricting shipments even to the contract business. Efforts to locate free coal in or around Detroit are said to prove unavailing. While some of the steam plants are operating with short-

ened supply, the outlook is not brightened by the fact that lower temperatures, now bring into the market additional customers, who require coal for heating stores and apartments.

Domestic consumers are also showing a larger interest in the market and their buying is reflected in the reduction of stock piles in various retail yards. The outlook, in the opinion of jobbers, is far from reassuring and conditions now developing seem to give slight basis for any expectation of improvement.

Anthracite—Despite reports of increased production, the volume of anthracite shipments into Detroit continues to fall short of the amount which jobbers say should be reaching the city to assure the supplying of all customers. While the situation in Detroit is unsatisfactory, conditions in other towns of the state, outside, are reported worse. Retail dealers in these towns are said to be unable to obtain a supply of anthracite through jobbers who usually provide for their needs. The jobbers explain they are unable to deliver the coal. Attempts by the retailers to buy direct from the operators have been unsuccessful in many instances, while the customers of the retail yards are urging immediate delivery of winter fuel.

Lake Trade—Deficiency in car supply produced another falling off in volume of shipments over Lake routes. With only a limited quantity of coal coming to loading docks a number of vessels have made the up-bound trip without cargo. Others have been obliged to load at two ports and at different docks to complete cargoes.

COLUMBUS

The coal trade in Ohio is still in an unsettled condition. There is a good demand for domestic and steam grades. Lake trade is still active and a large tonnage is going to the Northwest.

There is a good demand for both domestic and steam tonnage in Ohio, although the announcement that there is no danger of a fuel famine has relieved the stress to a certain extent. Retailers are probably the most insistent for tonnage as householders are now in the market. On the whole, the situation is still "up in the air" to a certain extent, as the price question has not yet been settled.

Steam demand, especially from public utility concerns, has been strong. Quite a few power and electric railroad concerns have been hard put to it for fuel and frequent calls have been made on the Ohio Clearing House for coal. In practically every case relief has been afforded. Manufacturing establishments are also rather short on supplies, although some of the larger users are well supplied.

The Lake trade is one of the best features and a large tonnage is still going to the Northwest. During the past week the shipments have been unusually large. With good weather and late navigation it is believed that supplies for the Northwest will be sufficient for the winter.

Prices on short tons, f.o.b. mines, are as follows:

	Hocking	Pomeroy	Eastern Ohio
Rescreened lump	$2 25	$2 60	...
Inch and a quarter	2 25	2 60	$2 25
Three-quarter inch	2 25	2 60	2 25
Nut	2 25	2 60	2 25
Egg	2 25	2 60	...
Mine run	2 00	2 25	2 00
Nut, pea and slack	1 75	2 00	1.75
Coarse slack	1.75	2.00	1.75

CINCINNATI

Demand is heavy in spite of domestic consumers holding off. The movement North is taking all fuel that can be produced and forwarded.

Reports from all quarters indicate that the supply of coal on hand in Cincinnati is dangerously low for the lateness of the season. With consumers still refusing to buy, on account of the maintenance of prices at virtually the levels prevailing before the Government's announcement of lower figures, it is practically certain that winter will begin with little fuel in the hands of retailers or consumers.

In the meantime, the movement of coal from both eastern Kentucky and West Virginia fields through this gateway continues in heavy volume, giving support to the declaration of operators that they can dispose of all of their output at figures considerably more satisfactory than those of the Government.

Large steam consumers are showing increasing anxiety about their coal supply, and, as heretofore, are more concerned about getting the coal than about the price to be paid for it. State authorities visited Cincinnati during the week to investigate the situation, and promised action looking toward lower prices.

LOUISVILLE

Industrial demand for coal begins to show insistence. Western Kentucky operators deluged with inquiries. Southeastern Kentucky-Tennessee strike continues. Domestic situation disturbing.

A feature of the market in this field during the last week or so has been the great number of inquiries addressed to the western Kentucky operators. For the first time in years western Kentucky coal is being shipped in some quantities to Indiana and southern Illinois points and the demand is for coal, irrespective of price. Some Northern buyers have come in person to Louisville in search of coal.

Western Kentucky operators who have retail connections and agencies are exerting themselves to accumulate stocks in their retail yards and continue shipping on contracts and orders booked previously to the latest Government schedule. Government prices, f.o.b. the mines are quoted, but there is little coal to sell.

Perhaps about 5 per cent. of a normal output is being shipped from the southeastern Kentucky-Tennessee section and consumers in territories which have been dependent on that coal are facing a situation which is described as desperate. Efforts to obtain coal from the eastern Kentucky field are only moderately successful. Government intervention to force an end to the strike is discussed, while some operators state that the strikers are almost ready to return to work, without recognition of the union.

A disquieting situation exists in the retail market. Stocks of domestic sizes in the Louisville and nearby yards are low and prices continue high, with a few exceptions, none of the leading companies reducing prices or making any promises. Newspaper discussions about the rapacity of the "coal barons" and what the Government is going to do keep the domestic consumer stirred up and calling up the retailer, but he still holds off from buying. Many large employing concerns are buying lump and selling it to their employees at cost.

BIRMINGHAM

Action on price revision still delayed by Government. In the meantime the cry for coal is becoming more insistent and the acuteness of the shortage correspondingly pronounced. Production has gradually increased to from 60 to 80 per cent. normal, which is inadequate to care for contract business, hence there is no surplus coal.

Activity in the coal market is still throttled by the failure of the Government officials to definitely settle upon the permanent price schedule, and each day the consuming public is getting in more desperate straits for fuel. Coal men are being flooded with letters and telegrams and besieged with personal appeals for fuel and have none to offer. It is stated that the retail yards in a number of Southern cities have been relieved of their entire stocks of domestic coal by steam users and under present conditions are unable to replenish their supply.

Practically the only sales of any consequence in the spot market the past week was a Government order for approximately 3000 tons of domestic coal to be delivered to the several Southern cantonments during the month of October. This was distributed between the various companies and booked at Government prices, subject to any readjustments which may be made.

Anent the prices named by the President to govern the disposition of Alabama coal and the impossibility of operators maintaining production under such schedule restrictions, a prominent and well-versed coal man stated that "the commercial production of Alabama for 1917 will be approximately nine million tons, out of which 58.5 per cent. absolutely careful calculation of that production costs either what the President has authorized as selling price, or more, and a large per cent. of that figure costs from 50c. to $1 more than the President has authorized it to be sold for."

Abundant statistics of an equally convincing nature have been placed in the hands of Dr Garfield and other Government officials, and although relief is confidently expected, the uncertainty of its pronouncement and extent is keeping the market in a chaotic condition and discouraging the assumption of normal production.

Coke

CONNELLSVILLE

Price fixed at $6, details later. Bulk of tonnage already contracted for.

The price of Connellsville coke has been fixed by the Government at $6. Details have not yet been arranged, as to the differential for foundry coke, high sulphur coke, etc. Last Friday the coke men met representatives of the Government in a body, together with the iron ore, pig iron and steel producers, and proposed a price of $6.50. This was considered too high and the Washington authorities, under power given by the Lever act, placed the price 50 cents less. Thus the price is practically the result of an agreement. It is very high relative to the $2 coal price, but that is likely to be increased. The announcement was made on Monday afternoon and Tuesday several carloads of spot furnace coke were sold at $6, this same coke having been offered the day before at $12.50 but not finding takers.

There has been a great deal of contracting for coke in the past fortnight and between one-half and two-thirds of the available merchant output has been disposed of under contract for next year, mostly for the whole year, but some contracts run only for the first half. The bulk of the business was done at flat prices, but some was done on a ratio basis, some at 4½ tons and some at 5 tons of coke against one ton of pig iron at the price prevailing. The flat price business was done chiefly at $8, $8.25 and $8.50, but a little is reported at a shade under $8 and it is claimed two contracts were made at $9. The buyers expected the Government to fix the price at a lower level, but paid the extra amount in the expectation that thereby they would receive full shipments on their contracts, while those who did not buy preferred to take their chances on getting deliveries at the Government price. If the Government should undertake to regulate deliveries those who hold the contracts may not find themselves as well off as they expected. We quote spot and contract coke at $6 per net ton at ovens.

Buffalo—The state of the trade is without much change, except that the price of furnace came up pretty near to foundry for some unexplained reason. Shippers say that the supply is small. The quotations, f.o.b. Buffalo, prior to price-fixing were: 72-hr. Connellsville foundry are $15.50, with $15 for furnace and $13 for low grades. Iron ore receipts by lake continue heavy, being for the week 330,440 gross tons.

Birmingham—Coke production is gradually assuming normal proportions, but producers state that there is practically no coke yet available for the spot trade or for new contract business. Contracts with old customers are being renewed as they expire at from $11 to $12.50 per net ton ovens. Several of the larger foundry coke producers are out of the market for from 30 to 90 days and the prospects are that there will be little coke available for the spot trade for some time to come. Foundry coke, it is stated, before price fixing brought from $15 to $16 per ton ovens when obtainable at all. Furnace coke is in heavy demand for local consumption and the supply is hardly equal to the requirements.

Middle Western

GENERAL REVIEW

Labor and car supply difficulties are increasing, all mines are oversold, production is falling off, and buyers are making desperate efforts to secure sufficient fuel for immediate demands.

The labor supply throughout the mining districts of Indiana and Illinois continues to grow steadily worse, and the general inefficiency of the workmen has seriously crippled production—the loss for this reason easily amounting to 15 per cent. less production than that for the same period last month. The miners are about to make demands for increases amounting to 20c. a ton for loaders, and a flat increase to $5 per day for the unskilled workers.

To make the labor situation considerably worse, representatives of the United States army have been canvassing the mining districts, bidding for unskilled workmen to go to the cantonments, offering to pay wages amounting to $6 per day in contrast with the $3.60 per day that the miners' agreement allows. They not only have taken every dissatisfied worker from the mines, but have caused men to become dissatisfied, with the result that there is a serious loss of workmen, and it is extremely doubtful if many of these men will return to the mines during the present labor shortage.

The car supply in the same mining fields has shown no improvement the past week and in some districts in Indiana, particularly Knox County, the supply has been poorer than at any time during the past six months. The railroads make no promises for the next few weeks, and operators

contend that many coal cars are being used for other freight. E. L. Lewis, chairman of the Indiana Public Service Commission, is just back from Washington, where he went to protest against diversion of cars by Lovett from the Indiana mines to haul coal destined for the Northwest. Mr. Lewis reports that there is much anxiety in Washington relative to the fuel supply for the Northwest, and that in parts of the country there will be great distress; also that the Federal authorities are apprehensive, especially in sections far removed from the coal fields.

The general movement of Eastern coals to sections of the Mid-west has been practically at a standstill for the past two weeks, this applying to bituminous from the West Virginia, Ohio and eastern Kentucky fields, also to all-rail shipments of anthracite.

CHICAGO

City in danger of coal famine. Priority to shipping cuts Chicago supply to low mark. Retailers expecting price regulation this week.

Shipments from Eastern fields have practically been suspended to Chicago and adjacent markets. Judge Lovett's order giving priority shipping rights to coal for the Northwest is responsible for this condition according to jobbers and retailers who claim they are in a position to know. Chicago is without any Pocahontas coal, and during the past week the Consumers Company, Chicago's largest retailers, received only 12 carloads while their contracts call for minimum shipments of 45,000 tons monthly. Efforts are being made to help relieve the situation.

Illinois mines are in a peculiar position. With 100 per cent. car supply less tonnage is being produced than at any time during the past year. Labor troubles are serious and several big mines in the central part of the state have been idle for weeks on account of strikes.

All Indiana and Illinois shippers are far behind on shipments, and are accepting no orders for immediate delivery. One large Franklin county shipper has more business booked for shipment the ensuing week than it is possible for the mines of the entire county to fill in the same period were they able to run with full labor and car supply. The demand which cannot be satisfied by southern Illinois has naturally flown to fill up the other mines of that state and Indiana, with the result that every mining company has more business than it can take care of inside the next 90 days, and orders continue to flood the offices of the various shippers, accompanied by personal pleas for prompt shipment.

With the appointment of a coal dictator for the state of Illinois, expected this week, relief is anticipated in Chicago. It is possible, that until such time as there are ample supplies of coal at various places now claiming to be experiencing a dangerous shortage, little, if any, coal will be permitted to be shipped to outside states. The non-producing states will, no doubt, experience considerable difficulty in getting fuel supplies.

The per cent. of work time in the mines of the southern part of Illinois-Franklin, Saline, Williamson and Perry counties, has ranged from 60 to 65 per cent. the past week. Except in mines served by one railroad only little of this loss has been due to poor car supply. Labor shortage and the general inefficiency of the workmen have caused most of the losses.

While most of the mines in the central part of the state have resumed operations the general attitude of the men is such that production is far below normal. Car supply has been ample and shippers are accepting no new business.

Operators in the thin-vein field of northern Illinois, have been advised by Federal authorities that permission will soon be granted for them to increase their prices slightly. If relief is not given at an early date a few of the older mines will be forced to suspend operations as their costs exceed the selling price.

Quotations in the Chicago market per net ton f.o.b. mines, are tabulated below.

	Williamson and Franklin	Saline and Harrisburg	Fulton and Peoria	Springfield	Carterville	Grundy, LaSalle, Bureau and Will
Steam lump	$2.20@2.35	$2.20@2.35	$2.20@2.35	$2.20@2.35	$2.20@2.35	$2.65@2.90
Domestic lump	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.90
Egg or furnace	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.90
Sm'l egg or nut	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.90
Stove	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.90
Chestnut	2.20@2.35	2.20@2.35	.....	.....	2.20@2.35	2.65@2.90
Pea	2.20@2.35	2.20@2.35	.....	.....	2.20@2.35	.....
Washed egg	2.20@2.35	.....	.....	.....	2.20@2.35	2.65@2.90
Washed stove	2.20@2.35	.....	.....	.....	2.20@2.35	2.65@2.90
Washed nut	2.20@2.35	.....	.....	.....	2.20@2.35	2.65@2.90
Mine-run	1.95@2.10	1.95@2.10	1.95@2.10	1.95@2.10	1.95@2.10	2.40@2.55
Screenings	1.70@1.85	1.70@1.95	1.75@1.90	1.75@1.90	1.75@1.90	2.15@2.30
Washed slack	1.70@1.95	.....	.....	.....	1.75@1.90	2.15@2.30

	Smokeless					
	Clinton and Sullivan	Knox and Greene	Eastern Kentucky	Pocah. and W. Va.	Penna.	Hocking	West Va. Splint
Dom. lump	$2.20@2.35	$2.20@2.35	$2.65@2.90	$2.25@2.40	$2.25@2.40	$2.60@2.75	$2.40@2.55
Steam lump	2.20@2.35	2.20@2.35	2.65@2.90	2.25@2.40	2.25@2.40	2.60@2.75	2.40@2.55
Egg	2.20@2.35	2.20@2.35	2.65@2.90	2.25@2.40	2.25@2.40	2.60@2.75	2.40@2.55
Sm'l. egg or nut	2.20@2.35	2.20@2.35	2.65@2.90	.....	.....	2.60@2.75	2.40@2.55
Mine-run	1.95@2.10	1.95@2.10	2.40@2.55	2.00@2.15	2.00@2.15	2.35@2.50	2.15
Screenings	1.70@1.85	1.70@1.85	2.15@2.30	1.75@1.90	1.75@1.90	2.10@2.25	1.90@2.05

MILWAUKEE

Increasing receipts of anthracite. Soft-coal receipts far below last year's record.

Receivers and dealers are looking for something to change the trend of the market, while consumers are hoping that anticipated price-regulation will be to their benefit. Meanwhile those who are taking no chances and are stocking up, are hogging in all they can by ordering beyond their average need. On the whole there are more individual bins filled than is customary up to this time of the year. This will make it easier for transients to get coal later on, and will also help the delivery situation in extreme weather.

Up to and including Sept. 24, the receipts of anthracite were 79,040 tons greater than during the same period last year. Forty thousand tons reached port within the past week. Receipts of soft coal, on the other hand, are 652,339 tons less. Strange to say, however, the yards are practically bare of hard coal, while many soft-coal piles are rising to old-time proportions. Several docks have received no coal by Lake whatever. The total receipts of hard coal up to the date named were 627,056 tons, and of soft coal 2,111,699 tons.

ST. LOUIS

Conditions in St. Louis remain abou. the same as last week. Critical conditions for Southwestern territory on high grade. Mt. Olive field still unchanged. No Eastern coals.

Conditions this week remain about the same as last week. A great many consumers are still holding off from buying their coal, thinking the Government will make cheaper prices than now exist.

However, the cold weather during the last week has increased the demand on the local dealers to such an extent that the market has been cleaned up daily of any surplus coal of any kind.

The Williamson and Franklin Field had only 63 per cent. running time the last week, against 72 per cent. the week before. This only adds to the inability of the operators to furnish this coal for this market.

Orders from the Southwestern territory have been coming in at a rapid rate for Williamson and Franklin County coal, and owing to the shortage of cars most of these orders are declined, making the conditions extremely critical for that region.

There is a large demand for screenings and mine-run. These sizes are still short and would demand a premium were this possible.

The Mt. Olive field is still unchanged. Orders taken for this grade of coal the latter part of August and the first part of September have swamped the mines and they are unable to supply the demand.

The conditions in the Standard field are rapidly tightening up, owing to the shortage of equipment for the mines. The present domestic demand is good.

Anthracite continues to come into this market in very small amounts. No West Virginia smokeless, nor Arkansas smokeless, is coming in at all.

The prevailing price, per net ton, f.o.b. mines, is:

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump	$2.20@2.35	$2.20@2.35	$2.20@2.35
3x6-in. egg	2.20@2.35	2.20@2.35	2.20@2.35
2x3-in. nut	2.20@2.35	2.20@2.35	2.20@2.35
No. 2 nut	2.20@2.35	.....	.....
No. 3 nut	2.20@2.35	.....	.....
No. 4 nut	2.20@2.35	.....	.....
No. 5 nut	1.70@1.85	.....	.....
2-in. scrgs	1.70@1.85	1.70@1.85	1.70@1.85
2-in. lump	.....	.....	2.20@2.35
3-in. lump	.....	2.20@2.35	.....
Steam egg	2.20@2.35	2.20@2.35	2.20@2.35
Mine run	1.95@2.10	1.95@2.10	1.95@2.10
Washed:			
No. 1	2.20@2.35	$2.20@2.35	.....
No. 2	2.20@2.35	2.20@2.35	.....
No. 3	2.20@2.35	2.20@2.35	.....
No. 4	2.20@2.35	2.20@2.35	.....
No. 5	1.70@1.85	1.70@1.85	.....

Williamson & Franklin Co. rate is 87½c.; other fields, 72½c.

Foreign Markets

ENGLAND

Reported by Hull, Blyth & Co., of London and Cardiff

Under date of Sept. 6, 1917

Coal—There is little change in the general position of the market. Tonnage is plentiful in the docks and coals are moving steadily away.

	Fixed Regulation Prices
Best Welsh steam coal	$8.02
Best seconds	7.67
Seconds	7.48
Best dry coal	7.30
Best Monmouthshires	7.30
Seconds	7.05
Best Cardiff smalls	5.60
Cargo smalls	4.86

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport, both net, exclusive of wharfage.

Freights—The demand for tonnage shows no falling off. Rates for unscheduled ports continue high.

Gibraltar	$23.10	Port Said	$42.50
Marseilles	21.80	Las Palmas	18.22
Genoa	24.60	St. Vincent	19.44
Naples	23.86	River Plate	27.32
Alexandria	42.50		

OCEAN FREIGHTS

Freight market conditions are practically the same as a week ago, and very few steamers were chartered for export coal during this period. A number of sailing vessels, however, were chartered to load coals to Brazil and the Plate, the last fixtures being at or about $26 net to Buenos Aires, and at $27.50 net to Rio or Santos.

We would quote freight rates on coal by steamer as follows:

Europe	Sept. 24
Marseilles	$42.50 about
Spain (Atlantic)*	42.50 about
Spain (Med't'n)*	45.00 about

Note—Charters for Italy, France and Spain read: "Lay days to commence on steamer s arrival at or off port of discharge."

South America	
Montevideo	$30.18 about
La Plata or Buenos Aires	30.18 about
Rosario	34.00@36.42
Rio Janeiro	[3]29.00 about
Santos	[3]34.00 about
Chile (good port)	16.00@17.00
West Indies	
Havana	5.25@5.50
Cardenas, Sagua	7.50 about
Cienfuegos	7.50@8.00
Port au Spain	10.00@10.50
St. Lucia	10.00@10.50
St. Thomas	9.00@9.50
Barbados	10.00@10.50
Kingston	7.75 about
Curacao[1]	8.50 about
Santiago	7.50@8.00
Guantanamo	7.50@8.00
Bermuda	7.00 about
Mexico	
Vera Cruz	9.00@9.50
Tampico	9.00@9.50

* Spanish dues for account of cargo. [1] And p.c
[2] Or other good Spanish port. [3] Net.
W. W. Battie & Co.'s Coal Trade Freight Report.